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THE SCOPE OF THE ACTIVITIES OF THE ALIENIST.*

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By your preferment I have the honor of being your President for the term of a year. Though unworthy, I am grateful indeed to my friends who saw fit to confer upon me this badge of distinction. I shall endeavor to acquit myself in a manner that may merit a fair degree of approval of even those whom Sheridan would call "my d—d good-natured friends."

The selection of an appropriate subject for this address was, of course, my first cause of tribulation. I thought of telling of the brilliant achievements of our forefathers—their history—but that had been done, time and again, by abler essayists, so, concluded I, what's the use of repeating

"A little knowledge of the ways of men,
A little reading of their deeds and fates,
A little guessing at their thoughts and then
A quick forgetting of their names and deeds—
That's history."

Next, it occurred to me that literature might perchance be a profitable theme—a review of the writings and opinions of some of the masters in psychiatry—

"A little delving in the tomes they penned,
A little conning of the verse they writ,
A feeble grasping of their aims and trend,
A shadow mem'ry of their mirth and wit—
That's literature."

But soon I corrected the delusion that I could pen anything in this line of interest to you.

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Then, something pertaining to science—that branch which appeals to us as its apostles—suggested itself, but could I fail to be discouraged by what the rhymers has said?—

“A little daubing with a salt or two,
A little mussing with a sticky mess,
A few experiments half blundered through,
A twilight testing of a groping guess—
That’s science.”

Lest I be charged with the exhibition of symptoms of log-orrhœa in getting ready to bear you the simple message I have, I waste no more time in platitudes and excuses; but, without effort at well-turned phrases or rhetorical elegance, I shall make some rather rambling remarks on *The Scope of the Activities of the Alienist*.

I shall not essay to do more than present in a cursory manner some of the important offices incumbent upon us who are actually engaged in hospital work, and upon those who are in sympathy with efforts in behalf of the insane. I cannot hope to say anything that is new. I do not belong in the class known as originals, except original sinners. I am only a dispenser, if you please, of the products of other men’s brains. As no man, however, has a copyright, or mortgage, on all he thinks, I may at least be exonerated from the charge of literary piracy. If no less a personage than the immortal bard of Avon could, with impunity, borrow ideas, not words, from Boccaccio, surely a lesser light in the new science of psychiatry can, with propriety, be guided by the footprints of brilliant exemplars.

A distinguished Southern surgeon used in his presidential address before a society of medical gentlemen this forceful language:

Rigid self-inspection is the surest method of keeping sound, whether in theology or in medicine, and it can but be to our advantage to overhaul ourselves now and then and find out what we really are, what our motives and our purposes are, and what we are doing to attain the things we stand for.

What does it mean to be a well-qualified alienist? He must be a well-rounded physician, a searcher after causes of mental disease, a discriminating diagnostician and a clear-headed clinician, know and appreciate the difference in the workings of a normal and an abnormal mind, must be free from all taint of quackery,

charlatanry and fads, a good judge of human nature, and, like other good doctors, he should be altruistic. Particularly if he is the director or superintendent of an institution he must possess those qualities which a distinguished American, now much in the lime-light abroad, says are essential to good citizenship: "He must have those qualities which make for efficiency; and he must also have those qualities which direct the efficiency into channels for the public good"—for the good of others, as well as for the advancement of science.

The work before us, gentlemen, touches the humanities and the sciences at so many points that one is at a loss in selecting those matters for discussion which seem to be of the most vital importance. This Association has a definite purpose in that it has constituted itself the exponent of those broad principles which underlie a universal uplifting and healthfulness of the body and mind of members of the human race. Its chief aims are for an individual as well as a community cause. To be more explicit, it asks for the insane all the rights that are theirs as involuntary victims of disease and adverse circumstances, and for the people generally the protection that, in all fairness and justice, is their due. It also strives for a comprehensive understanding of the etiology, course, pathology and successful treatment of mental alienation. It does more. It tries, in a measure, to ascertain and point out the best and most rational way in which both the living and the yet unborn may be saved from brain disease and degeneracy, and a consequent life of suffering, dependence and unhappiness.

Have we translated into full action the principles which we have boldly and persistently advocated? Looking backward one can but be impressed that it has been an upward struggle of heroic effort and much sacrifice to reach the present status in the humane care and treatment of the insane and to acquire a fair degree of knowledge of psychiatry. Betterment in all conditions which go toward helping to make possible the higher character of institutional life, with the view of curing, or at least improving the condition of, the brain-sick, has been, for many years past, one of the main objects of those engaged in this great field of human activity. It has been especially of note that in recent years the

scientific has been taking its proper place alongside of the humane part of institutional work. This harmonious union and correlation of essential elements of success can but produce in time effective results. Those of us who have long been in the hospital service can bear witness that the apathy which was formerly largely prevalent in our ranks is giving way to a livelier interest and an increased activity. The observant student of history can but be impressed that it is a far cry from the purely custodial asylum of former times to the hospital of to-day.

Whatever may be attempted towards a purely high scientific standard, or however much we may insist upon grouping certain cases into "a clinical entity" or a "pathological entity" and labeling them with a distinctive name, we should not lose sight of the great fundamental importance of the purely practical side, embodied in kindly care, nursing and attention to the personal needs, comfort and happiness of the individual patients. Furthermore, we must remember that without an efficient and concordant adjustment of the administrative, executive, nursing and medical machinery, little can be accomplished either for the benefit of the patients or to the credit of those who direct and control the policy of an institution. Briefly stated, there must be a thorough blending and fusion of the scientific, the humane and the business factors.

Speaking of the improved conditions in the institutional care of the insane, it seems to me that in at least one particular, some in this country still entertain ideas and follow a practice that are not in accord with the modern humane trend. I refer to the use of those obsolete measures known as mechanical restraints, solitary confinement, etc. It matters not what an institution has done in the way of putting itself in the front ranks in the field of research work, in architectural beauty, in dazzling equipments, or in the establishment of a training school for nurses, etc., it is not entirely in harmony with modern ideas, if it forces insane persons under its care and protection to submit to the application of such brutalizing methods of control. Connolly, whose life was so crowded "with successful and generous labor for the advancement of science and its beneficent application to humanity," gave to the world an opinion about the non-restraint method which certainly is as applicable to-day as it was in his time. He said that such

kindly measures "tended to remove as far as possible all causes of excitement from the irritable, to soothe, encourage and comfort the depressed, to repress the violent, by methods that leave no ill effect on the temper, no painful recollection in the memory. Hope takes the place of fear, serenity is substituted for discontent, and the mind is left in a condition favorable to every impression likely to call forth salutary efforts."

Surely, with proper hydro-therapeutic means, a sufficient supply of trained and sympathetic attendants, quiet tact, discretion, attractive surroundings, a judicious application of psycho-therapy, employment and recreation, combined with rational medical and dietetic treatment, physical restraints and their like are not necessary to the proper management of an insane person who has lost his power of self-control. Experience of many years without restraint in any form and the minimum of confinement has fully satisfied me that they have no proper place in an institution for the insane.

For the despondent states of the melancholic there is much in the beautiful yearnings of these lines of poor Percy Shelly:

"Methinks there were a cure for these, with patience and care;
Twas perhaps an idle thought,
But I imagined that, if day by day,
I watched him and seldom went away,
And studied all the beatings of his heart,
With zeal as men study some stubborn art,
For their own good, and could by patience find,
An entrance to the caverns of his mind,
I might reclaim him from his dark estate."

It is well established that without proper classification of the acute, the chronic, the demented, the disturbed, the sick, the tubercular, the epileptic, the criminal and vicious, etc., it is impossible to carry into effect those measures that are known to be of most value in caring for and treating these respective classes. Fortunately we have seen in recent years the growth at the more modern institutions, of the cottage or pavilion and the farm-colony plans, which afford facilities for a desirable differentiation.

In successfully dealing with the acute, or recent and curable cases, work of the best quality is especially called for. Here should be the storm center, so to speak, of the medical and nursing

activities of an institution. We see in several of the States signs which point to brighter prospects for the insane, in the way of observation or psychopathic hospitals, or separate pavilions in connection with existing institutions. The better equipped and the more convenient are such departments for the prompt and efficient study and treatment of incipient cases, the better the results. To further enlarge the usefulness of a public institution there should be an out-door department to which threatening cases may go for examination, advice and treatment, in order that an impending attack may be averted. If every case of incipient insanity could have prompt scientific treatment, the crowds of chronic and incurable cases congregated in the hospitals would be decidedly smaller, and the cry for more room would seldom be heard. In the psychiatric hospital and clinic lies the greatest hope for the future.

Another matter has not received the attention it deserves: The after-care of the insane, strange to say, has been practically passed by in all but a few States, notably New York. No forward movement can be complete without this feature, which is one of the most effectual prophylactic measures yet suggested. It should constitute an important feature of the public service.

"Tis not enough to help the fallen up
But to support him after."

It will hardly be denied that, for one reason or other, there are also other conditions prevailing in many of our institutions and in our dealings with the insane, that do not approach the ideal, and probably never will until there is a more general professional and public awakening and a creation of a demand for higher standards everywhere. It is our duty then to continue to strive at every institution to put into operation whatever study and experience have proven to be most profitable. The modern spirit of advancement calls for the following: Larger means, better equipments, more and better qualified physicians and nurses, and sufficient compensation to justify their remaining in the service, elimination of politics and in lieu thereof the civil service or merit system in appointments, better means of classifying and separating the various types of patients, so that each may receive proper treatment and care, closer clinical study and more exact

observation of the bodily symptoms and diseases of individual patients, and the mental disorders of the various physical conditions. In place of restraints, sedative or doping drugs, simply housing and feeding and clothing, and the like, there needs to be more systematic recreation, and suitable and healthful physical and mental occupation. The medical treatment should be supplemented by surgical whenever the physical condition is of a nature to demand it. There should be maintained in every institution a laboratory for physiological, chemical, pathological and bacteriological investigations, and a systematic study of the patient in both a physical and mental aspect. By this means we can learn much respecting the part bacterial toxins and morbid ferments have in the causation of the insanities.

There are many things in our minds we want to do, many questions to be answered that call for systematic and energetic study "under favorable conditions in a well-staffed and well-equipped hospital," as well as outside of institutions. To quote from an address by Dr. Edwin A. Alderman, the distinguished president of the University of Virginia:

We are having many visions. Perhaps they are sometimes a little crude, perhaps we are occasionally hysterical in our visions, but it is a sublime sort of hysteria. Perhaps we sometimes think of too many things to do without staying long enough with the things we are already doing. We are busy with new problems, instead of coolly setting into eternal forms the concepts we are making. But we are learning. We will cool off some day and leave the next generation something to do. Each age has its dreams, which change with the mood of the centuries.

Economy in the construction and administration of public hospitals should, of course, be required. Those who manage such institutions owe it to the taxpayers to guard against extravagance, but too often there is an enforced penury which cripples or destroys utility. A parsimonious policy is responsible for the retardation of many of our institutions and the blocking of much good scientific work. It is a little trying on our nerves to go to the legislature and face the many obstacles in the way of advancement, or have a deaf ear turned to us when we are trying to bring about desired and needed reforms, or advocating what is known to be for the best interest of both the insane and the State.

The responsibility for the existence of causes of complaint and

of investigations of some of our institutions, must often rest upon the people who, as a general thing, give scant credit to those in charge for what they accomplish under unfavorable conditions, but are ready to condemn them for failing to do what is impossible with the means allowed by the legislature. Yet primarily the reason we don't accomplish all we desire is largely to be laid at our door. We often stand back and do not pursue a progressive policy in our relation with the legislature. The advance movement must start with us. Each of us is a part of the machinery which brings about achievement of effective results or failure.

True, in many instances the financial condition of the state does not admit of adopting a high standard of provision for the insane; but, nevertheless, we should present our arguments as strongly as possible, and then rest the case with the powers that be. In the language of Dr. Isaac Ray, we should be bold enough to say to these representatives of the people:

The insane within your borders require your aid; you are bound by the great law of humanity and by every sense of obligation to give it, as cheaply as you can consistently with the perfect accomplishment of the object, but cheap or dear, it must be given to the utmost extent which the progress of improvement has shown to be possible.

It is a regrettable fact that in practically every State the indigent insane receive first care in a jail—a prison—where they are often totally neglected, harshly treated and shamefully abused. There is a moral obligation upon every State to see that no citizen, either during the critical and trying time when the question of his insanity is under consideration, or pending his transfer to a hospital, is subjected to any such degradation and neglect.

We cannot repeat too frequently that the care and treatment of an insane person is no less a medical matter before than after he enters a hospital. Therefore, it should be a statutory requirement that the health officers, or some other authorized medical board or local medical officers, have preliminary control of all cases of alleged insanity until they are transferred to a proper institution. The neglect and abuse of the insane prior to commitment to a hospital are unquestionably the weakest points in our American system of dealing with these unfortunates. No one advanced step would be more far-reaching as a curative or a preventive measure

than the abolition of the cell in jail or public station as a place of detention of the insane. Here again we see the need of psychiatric hospitals or special wards in general hospitals.

I would suggest that this Association appoint a committee to ascertain the laws of commitment in the several States and to recommend whatever seems most in keeping with modern progress and conception of insanity. Such a committee might also do some other profitable work by making abstracts and reporting to the Association, of all the important new laws in the various States, which have to do with the care and supervision of the insane or any change in systems of management.

I would, furthermore, recommend that a strong committee be appointed to ascertain and report on the status of the medical and scientific work in the hospitals of the several States. If each of us knew more about what others were doing to advance psychiatry there would be given an impetus to better work throughout the country.

It cannot be too often nor too strongly emphasized that one of the greatest needs of the hour in advancing the cause of the insane, is the adding to the curriculum of every medical school an adequate course of systematic, didactic and clinical lectures in psychiatry, supplemented by a laboratory for experimental psychology. No up-to-date medical school can afford, in these times of advanced medical education, to be without its well-equipped chair of psychiatry, yet there are many that are not so equipped. Until this progressive step is taken this department of medicine must remain behind other specialties. It is a regrettable fact that, with few exceptions, the young medical graduates who are appointed to positions in the hospitals for the insane, have had little or no previous knowledge or training to fit them to intelligently diagnose or treat insanity.

Nothing goes farther in giving the general public false conceptions of insanity than the display of gross ignorance of many general practitioners. Frequently we are called in consultation to find an unfortunate brain-sick patient absolutely stupefied by opiates or other narcotics, or bound hand and foot, or otherwise improperly treated, simply because the physician had not had sufficient experience or instruction to qualify him to properly deal with cases of insanity in the early stages.

Furthermore, the average general practitioner often fails to recognize important mental symptoms until they have become chronic and probably incurable. When he becomes more familiar with mental diseases he will be a powerful factor not only in curing cases in the early stages, but in the application of preventive measures. Through him more than through any other agency can the "exaggerated apprehension of danger and the common notion of insanity as a disgrace, to be concealed or put out of sight, rather than a disease to be soon and wisely dealt with," be allayed.

To return to the young medical officer in the hospital—after he enters the service, he should be given every possible opportunity and incentive to pursue clinical and research work, instead of having practically his entire time taken up, as is usually the case in many of the institutions, with the daily routine ward-rounds oftentimes performed in a perfunctory manner. The really scientific study of the patients and their diseases cannot, under such conditions, receive the attention they deserve. The medical spirit needs more encouragement. The assistant physicians need to be more progressive and to have a broader conception of their field of activity.

The British Medico-Psychological Association has recently taken up consideration of means of promoting a more efficient medical service and encouraging scientific study by requiring a post-graduate diploma in psychiatry. Whether our hospital physicians, including superintendents, procure special diplomas or not, they should be given, from time to time, an opportunity of becoming familiar with what is being done in the best institutions and medical centers, and otherwise encouraged to keep fresh the interest in their specialty and in medicine generally to prevent routine of thought, and to become familiar with the best methods of practice.

There continue to be considerable criticism and comment in the lay as well as the medical press respecting expert testimony. It is especially the employment of alleged unscrupulous experts to assist lawyers in establishing insanity as a plea to secure a verdict of acquittal in criminal cases, that is condemned. How much truth there is in the charge that frequently such experts have been employed to help defendant attorneys in the construction and in

the conducting of cases so that somehow or other they fit in with some psychosis, and befuddle the jury, I do not know. At all events, dishonest experts when discovered should be promptly exposed and condemned by the medical profession. There should be a determination to discountenance any expert who is not guided, as far as can be ascertained, by a clear conscience, for after all, this, with competency, constitutes our tower of strength.

Then again, sympathy for the accused, or prejudice against him, or the persuasive and plausible statement of a shrewd attorney, sometimes leads an expert of small mental caliber and less firmness, and maybe a flexible conscience, to give an opinion desired by, or in the interest of, one side or the other. He unconsciously, perhaps, becomes a partizan, which fact, of course, makes him incompetent as an impartial witness, and for that reason he should be excluded from the witness chair. He is to be pitied rather than condemned.

Every right-thinking man is in sympathy with the man who defends the purity and sanctity of his home, or protects the good name of virtuous womanhood. The rights and protection of such a man should be amply safeguarded by law, and there should be no need of "proving him insane" as an excuse for doing what is sanctioned by the best elements of society. Even in these so-called unwritten law cases an alienist cannot be justified in prostituting the high science of medicine to supply what the law has failed to supply to give protection to the man whose cause is a just one.

What is and what is not insanity, more especially when the question of responsibility for crime is involved, is a serious matter and cannot be settled except by the most profound and conscientious students of mental medicine. For this and other obvious reasons the partizan and dishonest witness should go under the scorn of a high-minded and honorable profession. That reforms are needed to meet the present state of medical advancement, to alleviate the strained relations between the professions of law and medicine concerning expert testimony, and to put forensic medicine upon a higher plane, no impartial or capable alienist, I believe, will deny. I trust then that this Association will put itself on record as advocating some feasible plan that will perhaps set at rest and put upon sure and high ground the attitude of American psychiatry in this important phase of our work, that so deeply

concerns the public and the medical profession. I have no doubt that your able committee on expert testimony will offer most valuable suggestions.

The highest object in any field of medicine is prophylaxis. Preventive medicine is indeed the watchword of the times. It is then in this special field of professional and public service that the alienist should be aroused to a greater appreciation of his opportunities and of the influence he is capable of exercising for the common good.

Believing that in inherited instability we have a most potent etiological factor in insanity, epilepsy and degeneracy, much has been written in recent years as to who should be parents. "What is bred in the bone will out in the flesh" is a truism that few have attempted to refute. Yet we know little about the complex subject of heredity. We should strive by systematic and prolonged investigation to know more. For instance, how can it be explained satisfactorily that in a group of children with the same parentage, same environment, etc., one child will become insane, another an epileptic, another a degenerate or a criminal, and another develop into vigorous, intellectual and moral manhood? We cannot understand, in the light of observation and experience, how so distinguished a philosopher as Locke could support the strange theory that all persons came into the world with equal mental endowments, and that solely to education and training was due the development of the variation or difference in mental capacities.

Restriction of the marriage of the unfit, prenuptial examination of the male, segregation, sterilization and other measures having as their objects the checking of ancestral weakness and disease, continue to be live topics in scientific and sociological circles, yet none of these have been received with very much popular favor. This is due mainly to indifference and ignorance regarding the terrible effects of a bad heredity. A few states, however, have taken an advanced stand. The whole subject is still open to discussion and further suggestion on many interesting points, and it may be years before definite conclusions are reached. In the meantime it is especially incumbent upon psychiatrists to give most careful study, without prejudice, to every proposed rational means that gives any promise of improvement of the race by lessening the number of mental wrecks and degenerates that come into the world.

With the purpose of checking the procreation of the offspring of confirmed criminals and certain defectives, several States have, as you know, enacted laws authorizing vasectomy. To be productive, however, of appreciable benefit, it would have to be applied to all, or a large proportion of, confirmed criminals, habitual drunkards, and to defectives, such as epileptics, imbeciles, as well as to the chronic insane and to those manic-depressive cases who spend their time, during the intervals between attacks, away from the restraining influences of the hospital. There is certainly much that may be said in justification of even so radical a means of trying to protect succeeding generations. Of course whenever such measures are adopted there should be proper legal safe-guards and competent medical advice.

Pertinent to this important subject, Dr. Albert G. Keller, Professor of the Science of Society, Yale University, has this to say, in part, concerning the "limits of eugenics":

What eugenists can do, in this "age of reason," is to combat the grosser manifestations of counter-selection or breeding from the unfit, through the means of legislation and education. . . . Sympathy for the unfortunate unfit should not extend to the granting of the right of procreation, by which the parental unfitness is perpetuated at the expense of the fit who, at the very least, are taxed to afford the relief given. Here, too, any hurried or radical enterprise (e. g., the abrupt enforcement of premarital physical examination) is sure to run afoul of the folkways (e. g., the sense of modesty). But there is yet another way to work for eugenics; and that is to expand, so far as possible, the limits set for it by ignorance; to invoke an actual fear of consequences. This is the province of the medical man, who is in the position to know the dangers and to some extent to enforce what he knows on a number of people. Laws forbidding the most frequent cases of counter-selection (e. g., marriage of idiots) can be passed by the educated minority, and enforced by the machinery of the State on the ignorant or careless. There can be no grand overturning of what has existed time out of mind, but there can be a skillful elimination of certain gross extremes of man-breeding.

Whatever innovations we may advocate in efforts at prophylaxis, it cannot be too strongly urged that it is a part of our professional life to give practical advice and instruction to those who bear the responsibility of rearing and educating children, so that they may be competent to train the parents of the future to a reasonable understanding and appreciation of the advantages of proper environment, good habits, self-control and the value of

physical and mental hygiene. This is the most important part of the new work of all earnest and patriotic physicians.

As a close second to heredity, as a potent etiological factor in mental and nervous diseases and degeneracy, comes alcohol. Kraepelin says that over 33 per cent of insanity, idiocy and prostitution shows alcohol in parents. It is then not only the inebriate himself, but his descendants, that have to be considered. How to stop inebriety and its baneful effects is yet an unsolved problem. Prohibitionists see in the abolition of the saloon a remedy. Others view the situation entirely from a moral standpoint.

Some say that since American people are going to drink whether or no, the government should place the strictest possible regulations on the quality, the age, etc., of alcoholic beverages before they are put upon the market. As long as the manufacture of ardent spirits is permitted we shall have to contend against the many-sided evils of intemperance. At all events, we, as physicians, have a duty to perform in suggesting the best and most practical method of dealing with the inebriate, who is such not always from his own choosing. He constitutes a public problem the solution of which will probably come, at least to a great extent, through the medical profession and conservative social reformers.

The opinion that inebriety is due to psychic defect as well as moral delinquency is gaining ground, and that treatment to be effective must be based not upon emotional prejudice, but on scientific determinations of the nature of the defect, and the best methods of its correction. Therefore, it would seem that in special institutional treatment and proper legal control, confirmed drunkards, as well as drug habitues, have the greatest hope of relief and the best chance of restoration to useful and productive citizenship.

In this paper I have time simply to mention that the people, particularly the younger, should be taught more of the far-reaching effect of certain so-called social diseases. It is not appreciated what terrible results to both body and mind follow such loathsome affections. A distinguished English alienist says: "If only the evils of alcohol and venereal diseases were disposed of, then half the problem of insanity would disappear with them."

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The eagerness with which the medical profession is being supported in whatever it undertakes for the common good, should give encouragement to us to enlarge our scope of usefulness and to join other physicians and reformers in taking advantage of every opportunity to benefit our fellow creatures. Witness the anti-tuberculosis movement, which is continually gathering strength and becoming more and more effective in the conquest of that dread disease which has slayed its victims by the millions.

The world owes to Dr. Trudeau, the pioneer in the modern effective methods of cure of tuberculosis, a debt of gratitude it can never pay. We observe, too, with what vigor the cancer problem is being studied, what efforts are being made to eradicate hookworm, and the investigations going on looking to an understanding of the causes, treatment, etc., of pellagra. It is a significant sign of progress and public philanthropy that great institutions are established and maintained and great movements are promulgated through the beneficence of wealthy men, for the purpose of searching for means of preventing and curing disease, preserving and strengthening life and protecting it from its enemies.

Were educational campaigns set on foot throughout this country in respect to insanity, epilepsy and allied conditions, their prevention, causes and treatment, the effect would in time be far-reaching in its influence upon the physical and intellectual life of the entire nation. This educational movement should be conducted largely through the medical press, medical societies, popular lectures and by the personal instruction by well-qualified specialists.

We, my colleagues, should be skilled alienists and scientific physicians, but something more. We should be publicists as well. This country is looking to us, the general medical profession demands of us, and the mentally afflicted are appealing to us, to use every possible opportunity within the range of our high calling to advance science and to help the weak and the sick. Success or failure in the advance of psychiatry, and in preventing the continued increase in insanity and in the cure of those already insane, will depend largely upon how each of us uses his opportunities and does his duty. To us much has been given, of us much is expected.

Let us emulate the life and works of such a man as Connolly, a man of "broad and generous sympathies with the world," ever active in "measures for the general improvement of the people," giving his time and influence for their purpose, "lending his effective pen to their support." We, like him, should be associated with the benevolent, the high-toned, the progressive, and those who believe in the onward march of civilization, and in their duty to contribute what they can to aid it.

He who looks into the past and sees what progress has been made and contemplates the ever-broadening views of the present, must appreciate the great possibilities of the future. Indeed we have acquired a wider vision and there looms up a broader horizon. This generation is to be congratulated on the creative work it is doing. Never before has there been displayed more energy of a constructive nature than is found in almost every department of activity.

The evolution in psychiatry has been of slow growth, nevertheless, in view of the obstacles constantly in the way, this department of human endeavor has made creditable advance; but we need to go further—much further. Let the scope of our activities be such that we shall keep well abreast in the procession of progressive medical science, philanthropy and national reforms, and in all things that have for their purpose health, happiness and usefulness of the people.

Let each of us, ladies and gentlemen, strive earnestly and diligently to carry forward the work in hand, fully realizing this maxim of the Talmud: "The day is short and work is great—the reward is also great—and the master presses. It is not incumbent on thee to complete the work, but thou must not therefore cease from it."

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SCHEME FOR A STANDARD MINIMUM EXAMINATION OF MENTAL CASES FOR USE IN HOSPITALS FOR THE INSANE.

BY WILLIAM A. WHITE, M. D., OF WASHINGTON, D. C.

In hospitals that admit large numbers of patients annually and in which the personnel of the medical staff is continually changing it becomes necessary to adopt some standard scheme of examination of the patients for several reasons. Of the innumerable things that might be required in such an examination many have only occasional value and many, in the nature of the case, could not be required at all. It, therefore, becomes necessary in outlining any scheme for general application to have in view only a minimum requirement. In other words, so much at least shall be done in every case and as much more as the examiner desires or the necessities of the case indicate.

A standard examination soon becomes familiar to all. In using it one is less likely to leave out essentials, as very often happens when the examination is conducted in a desultory way without any plan of procedure. Certain portions of the examination, as for example the stories, can merely be referred to by name and do not have to be repeated each time, such as the cowboy story, the good-girl story, etc. (See Table VII.) Every one knows these tests by heart and the response of the patient is all that needs to be recorded. Then again the standard examination gives a better basis of comparison between different patients, particularly those suffering from similar conditions. It is also a means of calibrating, so to speak, the individual patient at different periods of his malady. The same mental tests gone through with at different times give an excellent idea of whether the patient's condition is changing or not and indicate, too, something of the nature of the change. With a standard method it is much easier to initiate new men as they come on the staff. They find the scheme in full operation and soon fall into using it. This renders them highly valuable at a time when they would be comparatively useless if merely permitted to

drift and suit their own inclinations. This last reason is a particularly strong one in hospitals for the insane, where the whole problem is so different from that in the general hospital.

The principal value that a scheme of examination may have, however, is in formulating tests that call for an actual record of the patient's reaction and not the conclusion of the examiner. Our mental examinations are filled with such remarks as "the patient shows lack of judgment" or is "disoriented" or has "failure of memory." All of these are conclusions and by no means records of fact. Such histories are useless to any one except perhaps the person who wrote them. The reader of a history is entitled to a statement of the facts on which the conclusion is based and then he is at liberty to form his own conclusion from the identical premises. How much better and more accurate than the statement "defective memory" would be this test: The patient in the course of the examination is given the address, 375 Oxford St. After five minutes he is asked to recall it. He gives the number 176, but cannot give the name of the street at all. Here is a definite fact. A multiplicity of such facts gives any one a basis for conclusions about the patient. Of such statements should the record of an examination be composed.

The following scheme, which is largely the work of the Scientific Director, Dr. S. I. Franz, is the one now in use in the Government Hospital for the Insane and is the result of a considerable amount of study and experience. Suggestions have been culled from all available sources in its construction with a view to making it as useful as possible. Although further experience will undoubtedly cause it to be modified from time to time, it has proven so valuable to us thus far that I am reproducing it here in the hope that it may be of use to others.

The examination of a mental case should be carried out under several heads as follows:

- I. Family history.
- II. History of patient.
- III. Present illness.
- IV. General observations.
- V. General physical examination.
- VI. Neurological examination.
- VII. Mental examination.

It is recommended, for hospitals for the insane, that the following tables be prepared in chart form and hung up in the examination room:

I. FAMILY HISTORY.

INFORMANT: (name, relationship to patient, address).

GRANDPARENTS: PARENTS: (uncles and aunts), SIBLINGS:

CHILDREN: (with abortions and miscarriages).

In securing the family history it must be remembered that it is equally important to get a record of all the normal members of the family as well as the abnormal and not stop with securing the latter, as is often done. The patient's relation to hereditary tendencies can only be determined by securing information about his ancestors. For example, Heron¹ has shown that the liability to insanity in children from insane stock is greatest among the earlier born and falls off rapidly, particularly after the fourth child.

II. HISTORY OF PATIENT.

FULL NAME: ADDRESS: OCCUPATION:

BIRTH: CHILDHOOD DISEASES: LEARNED TO WALK AND TALK:

DISEASES: (especially convulsions, delirium, head-injury, gonorrhœa, syphilis, rheumatism, neuritis).

HABITS: (alcohol, drugs and sexual).

MARRIAGE: MENSTRUATION: GYNECOLOGICAL:

PREVIOUS ATTACKS: (special attention to so-called hysterical, to breakdown, and to melancholic periods).

CRIMES AND MISDEMEANORS:

MENTAL MAKE-UP:

The history of the patient is especially important for getting a comprehensive idea of the sort of person the patient was before becoming insane. A given mental disorder cannot be fully understood without understanding, not only the circumstances that gave rise to it, but the other and more important factor, the make-up of the individual in whom the disorder occurs.

III. PRESENT ILLNESS:

ONSET: CAUSE: PHYSICAL: MENTAL AND MORAL CHANGES:

EMOTIONAL CONDITION: HALLUCINATIONS AND DELUSIONS:

JUDGMENT: MEMORY: SUICIDE AND HOMICIDE: INSIGHT:

Under this head is made an inquiry into all the circumstances

¹ David Heron, M. A.: A First Study of the Statistics of Insanity and the Inheritance of the Insane Diathesis. Eugenics Laboratory Memoirs, II. University of London.

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surrounding and conditioning the onset of the psychosis and the patient's attitude toward them and his insight. He should be asked frankly whether he believes himself insane; if not, how is it that he has been sent to a hospital for the insane; what he may have done or said to lead others to think him insane; what is his explanation of the whole situation and how it all came about.

IV. GENERAL OBSERVATIONS:

FACIAL EXPRESSION: APPEARANCE AND Demeanor: Movements:

SPEECH: MENTAL:

The general observation of the patient is, of course, always important: whether he appears silly, resentful, indifferent; whether he has mannerisms, etc. It is particularly important, however, in stuporous and delirious patients who either will not speak or are not responsive and, therefore, not accessible. These patients should be observed particularly as to their general attitude of body and limbs, the expression of the face, the reflexes, and the reactions—volitional, emotional, and organic (hunger, sexual, responding to calls of nature, etc.).

V. GENERAL PHYSICAL EXAMINATION.

FORM: NUTRITION: WEIGHT: HEIGHT: SKIN: BONES AND JOINTS:

DECUBITUS: SCARS: (especially penis and mouth).

RESPIRATORY SYSTEM:

CIRCULATORY SYSTEM: HEART-POSITION; SIZE AND SOUNDS; BLOOD-PRESSURE:

GENITO-URINARY SYSTEM:

GASTRO-INTESTINAL TRACT: STOMACH CONTENT; (if indicated); GLANDS; ABDOMEN:

SPUTUM: (if indicated). BLOOD COMPOSITION: (if indicated).

URINE: (always).

It is hardly necessary to insist upon the necessity for a thorough physical examination in every case. It is especially important in the deliria in which the mental disorder may be the expression of an obscure physical condition.

VI. NEUROLOGICAL EXAMINATION.

ATROPHY: HYPERTROPHY:

MOVEMENTS, VOLUNTARY: *Activity; rapidity; accuracy; force; (especially paresis): limitations.*

MOVEMENTS, INVOLUNTARY: *rigidity; tremor (at rest, intention); spasms; convulsions.*

REFLEXES: *KK; * TA; contralat. add.; plantar; cremasteric (inguinal); bladder; anal; epigastric; triceps; ulnar; radial; jaw; clonus; (ankle, patellar and wrist).*

NERVE-TRUNK SENSITIVENESS: TENDER AREAS: (especially vertebræ, breast, ovarian).

CO-ORDINATION: FN; FF; FT; KH; *station* (eyes open and closed, one and both feet); *gait*.

SENSATIONS: *touch*; *pain*; *organic*; *paresthesia*; *hypesthesia*; *hyperesthesia*; *anesthesia*; *analgesia*; *sense of position*; *feeling of reality*.

CRANIAL NERVES:

1. *Smell*, solutions and subjective.

2. *Hemiopia*; *fundus*; *hallucinations*.

3, 4, 6. *Eye movements* (all directions); *squint*; *diplopia*; *ptosis*; *nystagmus* (horizontal, vertical, rotary).

PUPILS: *Size*; *outline*; *direct light*; *consensual light*; *accomodation*; *sympathetic*.

5. Corneal reflex; chewing movements; taste; solutions and subjective.

7. *Facial symmetry*: (whistling); *tremors*; *test-phrases*.

8. Hearing, objective and subjective vertigo.

9, 10, 11. *Swallowing*; *pharyngeal reflex*.

12. *Protrusion of tongue*.

In a condition which admittedly involves the central nervous organs, particularly the brain, the neurological examination becomes of the greatest importance. Especial importance should be paid to the cranial nerve distributions and to the presence of paralysis or anesthasias, which might have localizing significance.

VII. MENTAL EXAMINATION:

ORIENTATION: *time*; *place*; *people*.

GENERAL MEMORY: *family*; *school*; *occupation*; *marriage*; *children*; *diseases*.

EMOTIONAL STATUS: *Insight*; *sleep*; *dreams*.

HALLUCINATIONS: *auditory*; *visual*; *other senses*.

SPEECH: *voluntary*; *naming*; *writing*; (name, date, the U. S. A., the Commonwealth of Mass.); *auditory*; *visual*; *test-phrases*. (Statistical, perturbation, 3d Riding Artillery Brigade.)

STORIES: (Cowboy, Gilded Boy, Polar Bear, Shark, Good Girl).

SPECIAL MEMORY: (Civil War; name of two generals; three European countries; capital of native State; President; 45319628; 35984271; 487631; 955217; 7368; 9826; 487; 352; 375 Oxford Street; (after 3 or 5 minutes).

MASSELOIN: (hunter, dog, gun, forest, rabbit; man, wood coal, stove, dinner; needle, thread, button, vest; pipe, match, smoke; pen, ink, letter).

ZIEHEN: (horse and ox; dwarf and child; lie and mistake; water and ice).
7 × 6; 56 — 18; 23 — 14; 81 — 9; x — 5 = 17; x — 8 = 13; have 50c.; buy cherries 12c., butter 7c., bread 10c.; how much change?

FORWARD AND BACKWARD ASSOCIATIONS: (month; days of week; 752186, 35729, 6418, 265, 497).

* KK = knee kick. TA = tendo-Achilles. FN = finger nose. FF = finger finger. FT = fingers thumb. KH = knee heel.

GENERAL INFORMATION: *Cost of postage; color of stamps; holidays and meaning:* (Christmas, Easter, 4th of July).

FINCH: ("The early bird catches the worm"; "Lies have short legs"; "Set a thief to catch a thief"; "Burn a candle at both ends").

ETHICAL QUESTIONS:

DRAWING DIAGRAM: (after 5 seconds' exposure).

Here especial caution is needed to avoid recording conclusions. For example: Under orientation the patient's actual answers to such questions as, When were you born? How old are you? What day is this? etc., should be put down.

The stories which are used have been selected with great care and are follows:

Cowboy Story.—A cowboy from Arizona went to San Francisco with his dog, which he left at a dealer's while he purchased a new suit of clothes. Dressed finely, he went to the dog, whistled to him, called him by name and patted him. But the dog would have nothing to do with him in his new hat and coat but gave a mournful howl. Coaxing was of no effect, so the cowboy went away and donned his old garments, whereupon the dog immediately showed his wild joy on seeing his master as he thought he ought to be.

Gilded Boy Story.—It is related that at the coronation of one of the popes about three hundred years ago a little boy was chosen to act the part of an angel; and in order that his appearance might be as gorgeous as possible he was covered from head to foot with a coating of gold foil. He was soon taken sick and although every known means was employed for his recovery, except the removal of his fatal golden covering, he died in a few hours.

Polar Bear Story.—A female polar bear with two cubs was pursued by sailors over an ice field. She urged her cubs forward by running before them, and as it were, begging them to come on. At last in dread of their capture she pushed, then carried and pitched each before her, until they actually escaped. The polar bear is a wonderful swimmer and diver. In the capture of seals lying on the ice, it dives some distance off and swimming underneath the water, suddenly comes up close to the seals, cutting off their retreat to the sea.

Good Girl Story.—Once upon a time there was a girl, whose father and mother were dead, and who was so poor that finally she had nothing but the clothes on her back and a little piece of bread in her hand. She was deserted by everybody, but since she was good and honest she went into the world with confidence in God. As she went along she was met by a poor old man who said "Give me something to eat, I am hungry." The girl gave him the piece of bread and went on farther. Soon afterwards she encountered a little girl freezing and almost naked, who begged for clothes. The good girl gave the poor child the warmest of her garments. Night came on, the good girl was tired, cold and hungry. She traveled into the

woods, and, wandering off the road, she knelt and prayed to God. As she knelt she saw the stars falling all about her, and when she looked she found they were many bright gold dollars. (Adapted from Ziehen.)

Shark Story.—The son of a governor of Indiana was first officer on an Oriental steamer. When in the Indian Ocean the boat was overtaken by a typhoon and was violently tossed about. The officer was suddenly thrown overboard. A life preserver was thrown to him, but, on account of the heavy sea, difficulty was encountered in launching a boat. The crew, however, rushed to the side of the vessel to keep him in sight, but before their shuddering eyes the unlucky young man was grasped by one of the sharks encircling the steamer and was drawn under the water, leaving only a dark streak of blood. (Adapted from Ziehen.)

These stories are especially valuable. It is remarkable the amount of information that one can obtain from getting a patient to repeat one or two. Defects of memory and attention show immediately, while the manic tendency to elaboration is characteristic. They should never be omitted. The cowboy story is usually the easiest, while the good-girl story is hard, because of the great amount of detail. The emotional feature of the "streak of blood" in the shark story is particularly impressive and is often about the only feature of the story reproduced.

In the special memory tests, of course, different people will have to be treated differently. A Polish immigrant just landed would hardly know about the Civil War. The important thing, however, is to record actual question and answer.

In the Masselon tests the patient is asked to incorporate such words as pen, ink, letter, into a sentence. In the Ziehen test the patient is asked to tell the difference between horse and ox, dwarf and child, etc.

The problem of calculating the change left from 50c. after making certain purchases is an excellent example of the usefulness of standard questions. Every one on the staff knows that the answer is 21c.; and although this is a little thing, when multiplied many times it makes a great deal of difference in the ease with which one can go over a history or appreciate it when read.

The forward and backward associations are valuable as roughly quantitative. The average person should be able to give six numbers forward and five numbers backward. This test will disclose just how many the patient can give and is one of the valuable tests for repeating from time to time during the course of the

psychosis. It is also very valuable in detecting the malingerer. A definite intention to blunder is usually readily distinguishable from a natural blunder.¹

In the Finchk test the patient is asked the meaning of the several sayings such as "The early bird catches the worm."

Such ethical questions can be asked as What would you do if you saw a man drop a \$10 bill?

In addition to the tests given in the table we frequently use the Ebbinghaus test which consists of having the patient complete a sentence in which certain words have been left out such as: I got up in the , and after washing my went to Or better often is Ziehen's modification of this test. The patient is asked to complete such a sentence as this: If it rains because in spite of The Bourdon test is very valuable as a measure of attention. It consists of getting the patient to strike out certain recurring letters or numbers in a standard page and timing the result. A similar test is the tapping test—timing the number of taps that can be made in a given time, say thirty seconds.

Word association and free association are very valuable in a large number of cases as are the methods of psychanalysis generally. For obvious reasons they are not entered into here. They would require a separate paper for their discussion.

Of course the cases will be numerous in which it will be found desirable or necessary to pursue the examination further in some direction. No scheme can cover all possibilities and would be useless if it did, because impossible to carry out. Much must of necessity be left to the judgment of the examiner. By following this plan, however, it is believed that the general and important features necessary for a case record will be covered in the large majority of cases.

It is useful, after completing the examination, to accent the significant features in a short summary, which might include a provisional diagnosis if the facts warranted.

GOVERNMENT HOSPITAL FOR THE INSANE, WASHINGTON, D. C.

¹ For more elaborate tests see White: Outlines of Psychiatry. Jour. of Nerv. and Ment. Dis. Pub. Co., N. Y., 1909.

THE IMPORTANCE OF COMPLETE RECORDS OF THE
INSANE AND A FEW REMARKS, CONCERNING
CHIEFLY THE PRELIMINARY
EXAMINATION.*

By W. W. HAWKE, M. D.,

Philadelphia Hospital for the Insane, Philadelphia, Pa.

FORM OF RECORD.

Advantages of folder system over books.

Information from various sources (preserved in folders).

Writings, drawings and other productions of the patient.

Correspondence. Important as showing the intelligence and education of the relatives.

Purposes for which blank forms may be used.

General items for statistics (outside of folder).

Notification of relatives.

History from relatives.

Resident.

Non-resident.

Physical notes.

General.

Special (urinalysis, etc.).

PSYCHO-PHYSICAL EXPERIMENTS, important in special cases.

Sight, hearing, taste, smell, touch and pain.

Field of vision.

Associated movements.

Astereognosis.

Sensory and motor aphasia.

MENTAL EXAMINATIONS.

Importance of favorable conditions.

Examining room.

Light and ventilation. Simplicity.

Freedom from disturbances.

Physical condition of the patient.

Relief of any relievable discomfort.

Mental and emotional condition (especially at initial examination).

Influence of drugs.

Fright, due to strangeness of surroundings.

Suspicion or grief.

Importance of recording any defect in conditions which cannot be overcome.

* Read at the sixty-sixth annual meeting of the American Medico-Psychological Association, Washington, D. C., May 3-6, 1910.

Initial mental examination.

1. Importance of securing co-operation of patient, and of giving him a fair chance to show his true mental state.

Avoidance of severe cross-questioning, and other forms of inquiry that tend to confuse the patient.

Avoidance of giving any help by suggestion.

2. Experimental questions.

Suggestibility and negativism.

Effect of suggestion upon emotional state.

Repetition of same question as test for memory.

Significance and limitations of sensory disturbances as symptoms of mental disease.

Simple tests on attention and memory.

Limitation of any single method of determining mental condition.

Recognition of personal equation of patient.

Importance of considering how a sane person would react to similar conditions.

The care and thought which is given to the records of the patients in an institution may generally be taken as a fair index to the individual attention which each patient receives. This is true for two reasons: In the first place, the physician who takes special pains in the care of a patient will be inclined to keep a careful record, both in order to call the attention of others to the patient, and also in order that he may receive the credit that belongs to him for any improvement in the patient's condition. In the second place, a well-kept record of a patient inspires interest on the part of all who are concerned in his welfare, and thus works in his favor.

In most institutions the folder system of records has been substituted for the books that were formerly used. According to the old system, a single book contains all the admissions for a year, and the records of all the patients admitted during a given year are accessible to but one person at a time. The book of the current year is naturally in almost constant demand, and it is impossible for any one to make his notes as full as they should be without encroaching upon the rights of others who wish to use the book. All the notes must be written by hand, and as they are usually written in great haste, it is not surprising that some of them are almost illegible. Only two pages are allowed for the record of any patient, and this space is entirely inadequate for a patient of long residence in the institution.

In the folder system the length of the record can be adapted to the needs of the individual patient, and the folders can be kept on file so as to be easily accessible at all times. It is convenient on occasions to have the record of a patient in such form that it can be taken away from the hospital for a short time, as, for instance, when the patient is taken to a clinic or to court. Whenever possible the records should be typewritten. Items of information from various sources may be preserved in the folder, such as writings, drawings, and other productions of the patient.

Much of the information about the condition of a patient may be given in stereotyped form on printed blanks. It must be kept in mind that each patient is an individual, and the blank-form method of recording is to be regarded as a supplement to individual observations, rather than as a substitute for them. Even then it must be used with caution, because any one who habitually depends upon such aids is liable to become careless in his observations. The experienced examiner, of course, does not require the printed form; but it is of value to the inexperienced assistant, who has not had special training for this work and does not know what observations to make. There are certain questions that should be asked of every patient, and certain physical observations that should be made in each case. It is convenient, both for the making and for the reading of the records, that the notes on such points should be made according to a fixed plan; and this uniformity of records is especially helpful to any one who has occasion to consult a large number of them for statistical purposes. But the examiner must never feel that he has done his whole duty when he has filled out the various blanks, but should rather allow himself the use of this short cut for making the more simple and obviously necessary observations, merely in order that he may have more time for the careful individual study of each patient under his care.

It may be well to call attention to some of the special items for which the blank form may be used to good advantage.

It is convenient to give the information required by the Lunacy Commission, or for other records, and all such as is liable to be needed for statistical reports, on the outside of the folder, where it may be seen at once.

As soon as a patient is received into the hospital his relatives or friends should be notified of his admission, and it is convenient to use a blank form for this purpose. It is almost as important—and a good deal more difficult—for the physician to be on friendly terms with the relatives as with the patients. Sometimes they are as much in need of asylum care as is the patient himself, and it is an almost hopeless task for the physician to try to show them that he is working in the interest of the patient, and detaining him for his own good. Whenever the relatives are disposed to try to secure the release of the patient long before he can be safely cared for at home, their visits are almost sure to have a disturbing and detrimental effect upon the patient. It is, therefore, of the utmost importance that the physician should gain their confidence at the start, and enlist their co-operation in keeping the patient contented while he is in the hospital. The first step in the direction of a friendly understanding with the relatives is the prompt notification of the admission of the patient.

Another purpose for which the blank form may be used is for obtaining an early history of the disease from the relatives. This form should be very simple, so as to allow ample freedom for individual questions, because the physician who is experienced in taking histories will think of many questions which are not significant in all cases and which would, therefore, be out of place in printed form. But it is well to have another form especially designed for non-resident relatives who cannot give the physician a personal interview. This form should be as complete as possible, and each question should be definite, simple, non-technical, and so worded as to involve the least possible difficulty in the answer.

A general physical examination should be made of each patient received into the hospital, and this should be as complete as possible. If the condition of the patient permits, this examination should be made very soon after his admission. But frequently his condition is such that he would be unduly disturbed by it, and the effect might be detrimental to his health. A successful examination requires some co-operation on the part of the patient, and if he is unable or unwilling to do his part, it is better to make notes on his general condition and on any special symptoms that are observed, and reserve the prolonged examination until a more favor-

able time. Great care should be taken to avoid giving the patient any unnecessary annoyance, and if he becomes very restive under the examination it may be well to postpone part of it until another time. In case the examination is at best unsatisfactory, a note should be made of the fact and the apparent reasons for it. A brief description of the mental condition at the time of the examination should always be given, with special care to make note of any mental tendency that would have a bearing upon the reliability of the results of the examination.

Printed or stamped forms showing the viscera and body outline are often of service in recording the findings of the examiner. Heart murmurs may be traced upon such a form, and all injuries, scars, tumors and anæsthetic areas may be accurately located.

A complete analysis of the urine should always be made and recorded upon a special chart as soon as possible after the patient is admitted.

Mention should always be made of the keenness of sight, hearing, taste and smell, and especially of the sensitivity to touch and pain. These points may usually be noted with sufficient accuracy by simple observation or by rough experiments, such as any one can make without special apparatus. One may have a fair idea of the sensitivity to touch, for instance, by observing how much attention the patient pays to a fly that lights on his body during the examination. It is advisable, however, to make more careful and accurate experiments for determining any such factors which appear to have a special bearing upon the mental condition of the patient. Other psycho-physical experiments, which are useful in special cases, are the tests for the field of vision, the tendency to associated movements, sensory and motor aphasia and astereognosis.

Aside from the intrinsic importance of the physical examination, it is also of great significance by reason of the light which it throws upon the mental condition of the patient.

The mental examination should be made under the most favorable conditions that can be secured, so that the patient may have a fair chance to show his true mental state, rather than his passing mood. This is especially important in the case of a newly-admitted patient. The law in Pennsylvania requires that a pro-

visional mental diagnosis of each case be made within twenty-four hours of the admission of the patient, and, consequently, it is necessary to make the initial mental examination immediately after the admission. This is, in many cases, an unfavorable time. The patient may be under the influence of a sedative or other drug, so that it is difficult to arouse him to full consciousness of his surroundings. He may have been brought to the hospital under some false pretense, in which case he is liable to be excited and angry when he learns where he is, or he may be overcome by fear because he does not know. It may be necessary to make the examination in spite of these disadvantages, but, whenever it is evident that the patient's mental condition is seriously affected by the strangeness of his surroundings, it is well to make a note of the fact.

The examining room should be in a quiet part of the building, so as to be free from disturbances from outside. It should be well lighted, and very plainly furnished, with no unnecessary fixtures, wall decorations, or anything that would tend to distract the attention of the patient from the examination. The room should be of comfortable temperature and well ventilated.

The patient should be made as comfortable as the circumstances permit. If he is suffering from thirst, it should be relieved before the examination is begun. If he is in pain, the fact should be noted.

It is not always possible to make the conditions meet all the ideal requirements, but it is possible, when the defects are serious enough to have a decided bearing upon the mood of the patient, to put on record a brief statement of the fact.

The physician should endeavor by every means to secure the confidence of the patient, both in order to have the best possible opportunity to understand his condition and also as a therapeutic measure. A good rule to follow is to be honest with the patient, and never make any promise that cannot be kept. If the patient feels that he has been deceived by the physician, he is liable to become suspicious of the whole institution; and this impression, once formed, is difficult to overcome. The physician should bear this in mind at the time of the initial mental examination, when a little tact and courtesy will go a long way toward making the

patient content to remain in the hospital and to obey the medical instructions.

The initial mental examination may for convenience be divided into two parts, although the dividing line should not be apparent to any one except the examiner. The purpose of the first part is to see how coherent and how correct an account of himself a patient can give, unaided by any suggestions from the examiner. Severe cross-questioning should be avoided, and all forms of inquiry that would tend to confuse the patient. On the other hand, it is not advisable, in this part of the examination, to give him any direct help in expressing himself, or to ask a question in such a way as to imply what answer is expected. Many of the statements of a patient, especially about his delusions and hallucinations, are much more significant when made spontaneously than when drawn from him by direct questions.

When the examiner makes a definite attempt to elicit hallucinations he is liable to find what he is looking for, whether it is there or not. Even an unprejudiced and experienced examiner may become confused as to which of the patient's answers are founded on fact and which are given merely in response to suggestion. Patients who were entirely free from hallucinations have been known to acknowledge them in answer to questions, sometimes because of a tendency to accept without reflection any suggestion that is offered, sometimes because they think the examiner is inquiring about their dreams, and take it for granted that he will understand that they are relating dreams, and occasionally because they think the questions are too foolish to be taken seriously, and assent to all questions merely to make sport of the examiner. It is plain that some of these sources of error may be avoided by making the first questions as general as possible, so as to give the patient a chance to tell his story in his own way. After he has given all the information he is disposed to give, questions may be used more freely, but they should not be too direct. Sometimes a patient who is trying to conceal his delusions and hallucinations, and who would deny them if questioned directly about them, may disclose them without knowing it in his answers to questions on other subjects.

In the second part of the examination the purpose of the ques-

tions is not to obtain information from the patient, but merely to determine how he will answer them. Questions asked with this view may be called experimental questions and they are useful for several purposes. It is permissible, in this part of the examination, to give suggestions of varying degrees of directness, in order to see how readily the patient responds to suggestion.

Suggestibility is of considerable significance as a symptom and it is important to note its presence. Negativism is also an important symptom which may sometimes be observed by means of suggestive questions. The effect of suggestion upon the mood or emotional state of a patient should also be observed. If he can be made either happy or depressed by the questions of the examiner, or if he shows amusement or resentment at other questions, the variability of his mood is of significance in diagnosis. Suggestions of this nature are important, also, as showing in what cases suggestive therapeutic measures are most likely to be of use.

In many cases it is of interest to repeat certain questions at intervals during the examination in order to see how well the answers will agree. If they are contradictory it should be noted whether the inconsistency appears to be from loss of memory, from inattention and careless indifference, or from ignorance and illiteracy. If there is evidence of positive inability to recall, it should be observed for what kind of events, and for what time of life the memory is most impaired. If the patient's attention is called to the inconsistency, it should be noted if he attempts to explain and reconcile the contradictory statements, if he acknowledges that he is mixed up, or if he becomes irritated.

It is of great importance that all notes on hallucinations and other sensory disturbances should be accurate, because, if not so, they may be very misleading. Hallucinations are especially characteristic of certain forms of mental disease, and, for this reason, their significance is liable to be overestimated. As has already been shown, the frank statement of a patient that he sees visions and hears voices does not always indicate that he has true hallucinations. Even if it is reasonably certain that the patient intends to be truthful in his description of his visions, it is not safe for the examiner to accept his account of them until he has ascertained whether the patient refers to dreams or waking experiences. That

a patient should mistake a dream for a real experience is not in itself an indication of insanity. Almost any one may be deceived by a dream that is in every way consistent with real life. Some dreams are more vivid, more interesting, and more distinctly remembered than are some experiences of real life or a dream-like event. We cannot depend entirely upon our sense of reality; we usually decide the matter by means of some external evidence. We are not deceived by a dream that conflicts with the laws of space, time, gravity and energy, because we have more confidence in these laws than in our senses. In like manner, we regard as a dream any experience, however possible in itself, which conflicts with the experience of yesterday as we remember it. If we know that we were in Philadelphia all day yesterday, we are no more liable to be deceived by a dream of a trip to New York than by a dream of a trip to the moon. But we may be deceived by a dream of an insignificant event which, if real, would occupy but a moment of time. A man who is accustomed to being called in the morning may be wholly at a loss to know whether the call which he seemed to hear a few minutes ago was a dream or a real experience. However much he would like to regard it as a dream, he may have so distinct a memory of having heard and answered the call that he rises without looking at his watch and learns later, to his great sorrow, that he has needlessly sacrificed several minutes that he might have spent in bed.

In distinguishing between dreams and real events, the educated man has a great advantage over the uneducated. The ignorant man, having but little knowledge of natural laws, places undue reliance upon his senses, and consequently is the more often deceived. Any one who believes in ghosts is as liable to be deceived by a dream of a ghost in his bedroom as by a dream of looking at his watch or of hearing the call to rise.

Ignorance and superstition are probably responsible for a considerable number of the visions and fantastic ideas that go down upon our records as hallucinations and delusions. It may sometimes be impossible to find out with certainty whether a patient is delusional or merely superstitious, but in such cases the examiner should put on record a note about the general intelligence of the patient and leave the reader of the record to draw his own conclusions.

When hallucinations are known to be present, it still remains to be determined what bearing, if any, they have upon the mental condition of the patient. Many sane persons have had hallucinations, and they are by no means inseparable from mental disease. The significance of hallucinations lies rather in their effect upon conduct than upon the mere fact of sense deception. It makes little difference whether the effect upon conduct is good or bad; it is sufficient to show that they have any effect. Visions are too uncertain to be regarded as a safe guide for conduct, and the man who depends upon them in regulating his life is an unsafe person to be at large. If sensory disturbances were always observed with reference to their bearing on the habits of thought and action of the patient, much unnecessary confusion and misunderstanding might be avoided. When the presence of hallucinations is recorded in the history of a patient, it should be accompanied by a statement about the patient's attitude toward his sensory disturbances, in order to show what tendency there is for the hallucinations to give rise to fixed delusions, and especially to show how far they are liable to influence the patient's conduct.

In special cases it is helpful to make simple tests on the attention, memory and other mental processes. Arithmetical calculations may be used for this purpose, or the patient may be requested to memorize a series of numbers, letters, or words, the object being to determine the length of time required for the process. It is not advisable to attempt such tests in all cases, but only upon such patients as are able and willing to co-operate. The test should be adapted, more or less, to the individual patient, so as to conform to his ability, education and interests. The purpose of the test is to aid the examiner in understanding the condition of a particular patient, rather than to form a standard for comparison between different patients. The ability of any person along any line is determined by individual factors, and it would not be safe to draw conclusions from the record of a given patient as compared with that of another patient, or as compared with that of a sane person. But the comparison of different records of the same patient, taken at different times, may be significant in showing the progress of convalescence or deterioration, and the general attitude of the patient toward the test—his willingness or reluctance to comply

with the conditions and his interest or indifference as to what kind of a record he is making—may give the examiner some insight into his mental condition, independently of the results.

There are many methods of observing the insane, each of which is useful in its own way, but none of which will suffice for the examination of all patients. The personal equation of each patient is a factor which should always be recognized, and to determine which of the methods are best suited to a given patient, one needs a moderate supply of common sense—a faculty which is not wholly at a discount even when one is dealing with sane persons. It is a good plan to always consider in what manner a sane person would react to similar conditions.

It may be seen from the records of any asylum, how much care is taken to understand each patient as an individual. Every physician who has charge of a very large number of patients is in danger of drifting into a narrow routine of work; and this tendency may be seen in the mechanical similarity of the records of different patients, and in the oft-repeated statement that a patient is confused or that he has hallucinations. But the records of a physician who makes all possible effort to keep out of ruts may be easily distinguished from the records of one who habitually thinks of a patient merely as a patient—as if all patients were alike.



A STUDY OF ASSOCIATION IN INSANITY.

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PART I. ASSOCIATION IN NORMAL SUBJECTS.

Among the most striking and commonly observed manifestations of insanity are certain disorders of the flow of utterance which appear to be dependent upon a derangement of the psychical processes commonly termed association of ideas. These disorders have to some extent been made the subject of psychological experimentation, and the object of this investigation is to continue and extend the study of these phenomena by an application of the experimental method known as the association test.

§ I. METHOD OF INVESTIGATION.

In this investigation we have followed a modified form of the method developed by Sommer,¹ the essential feature of which is the statistical treatment of results obtained by uniform technique from a large number of cases.

The stimulus consists of a series of one hundred spoken words, to each of which the subject is directed to react by the first word which it makes him think of. In the selection of the stimulus words, sixty-six of which were taken from the list suggested by Sommer, we have taken care to avoid such words as are especially liable to call up personal experiences, and have so arranged the words as to separate any two which bear an obviously close relation to one another. After much preliminary experimentation we adopted the following list of words:

1 Table	11 Black	21 Sweet	31 Rough	41 High
2 Dark	12 Mutton	22 Whistle	32 Citizen	42 Working
3 Music	13 Comfort	23 Woman	33 Foot	43 Sour
4 Sickness	14 Hand	24 Cold	34 Spider	44 Earth
5 Man	15 Short	25 Slow	35 Needle	45 Trout
6 Deep	16 Fruit	26 Wish	36 Red	46 Soldier
7 Soft	17 Butterfly	27 River	37 Sleep	47 Cabbage
8 Eating	18 Smooth	28 White	38 Anger	48 Hard
9 Mountain	19 Command	29 Beautiful	39 Carpet	49 Eagle
10 House	20 Chair	30 Window	40 Girl	50 Stomach

¹ Diagnostik der Geisteskrankheiten, p. 112.

51 Stem	61 Memory	71 Stove	81 Butter	91 Moon
52 Lamp	62 Sheep	72 Long	82 Doctor	92 Scissors
53 Dream	63 Bath	73 Religion	83 Loud	93 Quiet
54 Yellow	64 Cottage	74 Whiskey	84 Thief	94 Green
55 Bread	65 Swift	75 Child	85 Lion	95 Salt
56 Justice	66 Blue	76 Bitter	86 Joy	96 Street
57 Boy	67 Hungry	77 Hammer	87 Bed	97 King
58 Light	68 Priest	78 Thirsty	88 Heavy	98 Cheese
59 Health	69 Ocean	79 City	89 Tobacco	99 Blossom
60 Bible	70 Head	80 Square	90 Baby	100 Afraid

No attempt is made to secure uniformity of external conditions for the test; the aim has been rather to make it so simple as to render strictly experimental conditions unnecessary. The test may be made in any room that is reasonably free from distracting influences; the subject is seated with his back toward the experimenter, so that he cannot see the record; he is requested to respond to each stimulus word by one word, the first word that occurs to him other than the stimulus word itself, and on no account more than one word. If an untrained subject reacts by a sentence or phrase, a compound word, or a different grammatical form of the stimulus word, the reaction is left unrecorded, and the stimulus word is repeated at the close of the test.

In this investigation no account is taken of the reaction time. The reasons for this will be explained later.

The general plan has been first to apply the test to normal persons, so as to derive empirically a normal standard and to determine, if possible, the nature and limits of normal variation; and then to apply it to cases of various forms of insanity and to compare the results with the normal standard, with a view to determining the nature of pathological variation.

§ 2. THE NORMAL STANDARD.

In order to establish a standard which should fairly represent at least all the common types of association and which should show the extent of such variation as might be due to differences in sex, temperament, education, and environment, we have applied the test to over one thousand normal subjects.

Among these subjects were persons of both sexes and of ages ranging from eight years to over eighty years, persons following different occupations, possessing various degrees of mental capacity and education, and living in widely separated localities. Many were from Ireland, and some of these had but recently arrived in this country; others were from different parts of Europe,

but all were able to speak English with at least fair fluency. Over two hundred of the subjects, including a few university professors and other highly practiced observers, were professional men and women or college students. About five hundred were employed in one or another of the New York State hospitals for the insane, either as nurses and attendants or as workers at various trades; the majority of these were persons of common school education, but the group includes also, on the one hand, a considerable number of high school graduates; and on the other hand, a few laborers who were almost or wholly illiterate. Nearly one hundred and fifty of the subjects were boys and girls of high school age, pupils of the Ethical Culture School, New York City. The remaining subjects form a miscellaneous group, consisting largely of clerks and farmers.

§ 3. THE FREQUENCY TABLES.

From the records obtained from these normal subjects, including in all 100,000 reactions, we have compiled a series of tables, one for each stimulus word, showing all the different reactions given by one thousand subjects in response to that stimulus word, and the frequency with which each reaction has occurred.² These tables will be found at the end of the first part of this paper.

With the exception of a few distinctive proper names, which are indicated by initials, we have followed the plan of introducing each word into the table exactly as it was found in the record. In the arrangement of the words in each table, we have placed together all the derivatives of a single root, regardless of the strict alphabetical order.³

² A similar method of treating associations has been used by Cattell (*Mind*, Vol. XII, p. 68; Vol. XIV, p. 230), and more recently by Reinhold (*Zeitschr. f. Psychol.*, Vol. LIV, p. 183), but for other purposes.

³ It should be mentioned that we have discovered a few errors in these tables. Some of these were made in compiling them from the records, and were evidently due to the assistant's difficulty of reading a strange handwriting. Other errors have been found in the records themselves. Each of the stimulus words *butter*, *tobacco* and *king* appears from the tables to have been repeated by a subject as a reaction; such a reaction, had it occurred, would not have been accepted, and it is plain that the experimenter wrote the stimulus word in the space where the reaction word should have been written. Still other errors were due to the experimenter's failure to

The total number of different words elicited in response to any stimulus word is limited, varying from two hundred and eighty words in response to *anger* to seventy-two words in response to *needle*. Furthermore, for the great majority of subjects the limits are still narrower; to take a striking instance, in response to *dark* eight hundred subjects gave one or another of the following seven words: *light, night, black, color, room, bright, gloomy*; while only two hundred gave reactions other than these words; and only seventy subjects, out of the total number of one thousand, gave reactions which were not given by any other subject.

If any record obtained by this method be examined by referring to the frequency tables, the reactions contained in it will fall into two classes: the *common* reactions, those which are to be found in the tables, and the *individual* reactions, those which are not to be found in the tables. For the sake of accuracy, any reaction word which is not found in the table in its identical form, but which is a grammatical variant of a word found there, may be classed as *doubtful*.

The value of any reaction may be expressed by the figure representing the percentage of subjects who gave it. Thus the reaction, *table—chair*, which was given by two hundred and sixty-seven out of the total of our one thousand subjects, possesses a value of 26.7 per cent. The significance of this value from the clinical standpoint will be discussed later.

§ 4. NORMAL ASSOCIATIONAL TENDENCIES.

The normal subjects gave, on the average, 6.8 per cent of individual reactions, 1.5 per cent of doubtful ones, and 91.7 per cent of common ones. The range of variation was rather wide, a considerable number of subjects giving no individual reactions at all, while a few gave over 30 per cent.*

speak with sufficient distinctness when reading off the stimulus words; thus, the reaction *barks* in response to *dark* indicates that the stimulus word was probably understood as *dog*; and the reactions *blue* and *color* in response to *bread* indicate that the stimulus word was understood as *red*.

*In the study of the reactions furnished by our normal subjects it was possible to analyze the record of any subject only by removing it from the mass of material which forms our tables, and using as the standard of comparison the reactions of the remaining 999 subjects.

In order to determine the influence of age, sex, and education upon the tendency to give reactions of various values, we have selected three groups of subjects for special study: (1) one hundred persons of collegiate or professional education; (2) one hundred persons of common school education, employed in one of the State hospitals as attendants, but not as trained nurses; and (3) seventy-eight children under sixteen years of age. The reactions given by these subjects have been classified according to frequency of occurrence into seven groups: (a) individual reactions (value 0); (b) doubtful reactions (value \pm); (c) reactions given by one other person (value 0.1 per cent); (d) those given by from two to five others (value 0.2 — 0.5 per cent); (e) those given by from six to fifteen others (value 0.6 — 1.5 per cent); (f) those given by from sixteen to one hundred others (value 1.6 — 10.0 per cent); and (g) those given by more than one hundred others (value over 10.0 per cent). The averages obtained from these groups of subjects are shown in Table I, and the figures for men and women are given separately.

TABLE I.

Value of reactions		0	\pm	0.1%	0.2-0.5%	0.6-1.5%	1.6-10%	Over 10%
Sex	Number of cases	%	%	%	%	%	%	%
Persons of collegiate education	M. 60	9.2	1.3	5.2	9.7	11.0	27.8	35.5
	F. 40	9.5	1.3	3.9	9.8	11.7	28.9	23.4
	Both .. 100	9.3	1.3	4.7	9.7	11.3	28.2	34.4
Persons of common school education	M. 50	5.8	1.6	3.6	8.3	10.2	31.6	38.7
	F. 50	4.6	1.3	3.3	7.1	9.4	32.0	42.1
	Both .. 100	5.2	1.4	3.5	7.7	9.8	31.8	40.4
School children under 16 years of age	M. 33	5.9	0.8	4.2	8.7	10.6	28.5	38.5
	F. 45	5.6	1.9	4.6	9.8	11.6	30.1	36.7
	Both .. 78	5.7	1.4	4.5	9.3	11.2	29.4	37.4
General average....Both ..1000		6.8	1.5					

It will be observed that the proportion of individual reactions given by the subjects of collegiate education is slightly above the general average for all subjects, while that of each of the other classes is below the general average. In view, however, of the wide limits of variation among the thousand subjects, these deviations from the general average are no larger than might quite possibly occur by chance, and the number of cases in each group is so small that the conclusion that education tends to increase the number of individual reactions would hardly be justified.

It will be observed also that this comparative study does not show any considerable differences corresponding to age or sex.

With regard to the type of reaction, it is possible to select groups of records which present more or less consistently one of the following special tendencies: (1) the tendency to react by contrasts; (2) the tendency to react by synonyms or other defining terms; and (3) the tendency to react by qualifying or specifying terms. How clearly the selected groups show these tendencies is indicated by Table II. The majority of records, however, present no such tendency in a consistent way; nor is there any evidence to show that these tendencies, when they occur, are to be regarded as manifestations of permanent mental characteristics, since they might quite possibly be due to a more or less accidental and transient associational direction. No further study has as yet been made of these tendencies, for the reason that they do not appear to possess any pathological significance.

TABLE II.

Stimulus word.	Reaction word.	General value.	Special group values.					
			Contrasting group		Defining group		Specifying group	
			49 subjects.		73 subjects.		84 subjects.	
		%	No.	%	No.	%	No.	%
1. Table....	chair	26.7	25	51.0	11	15.1	10	11.9
	furniture	7.5	0	0	13	17.8	4	4.8
	round	1.0	1	2.0	0	0	4	4.8
	wood	7.6	2	4.1	9	12.3	10	11.9
7. Soft....	cotton	2.8	0	0	1	1.4	5	6.0
	easy	3.4	0	0	8	11.0	1	1.2
	feathers	2.4	0	0	1	1.4	5	6.0
	hard	36.5	34	69.4	14	19.2	18	21.4
	silk	1.0	0	0	0	0	2	2.4
	sponge	2.2	0	0	0	0	4	4.8
11. Black...	cloth	1.7	1	2.0	0	0	3	3.6
	color	12.9	0	0	20	27.4	6	7.1
	dress	2.9	1	2.0	1	1.4	9	10.7
	ink	1.4	0	0	1	1.4	4	4.8
	white	33.9	31	63.3	17	23.3	15	21.4
26. Wish...	desire	19.7	7	14.3	21	28.8	10	11.9
	longing	1.9	1	2.0	6	8.2	2	2.4
	money	3.2	0	0	1	1.4	3	3.6
29. Beautiful.	flowers	4.2	0	0	1	1.4	7	8.3
	girl	2.4	0	0	0	0	5	6.0
	homely	2.7	3	6.1	0	0	0	0
	lovely	6.4	2	4.1	7	9.6	2	2.4
	pleasing	1.6	0	0	3	4.1	0	0
	sky	1.6	0	0	0	0	3	3.6
	ugly	6.6	13	26.5	3	4.1	0	0

TABLE II.—Continued.

56. Justice.	court	6.4	2	4.1	5	6.8	10	11.9
	injustice	2.6	6	12.2	1	1.4	0	0
	right	15.7	3	6.1	20	27.4	13	15.5
59. Health.	comfort	2.6	0	0	5	6.8	1	1.2
	disease	0.9	2	4.1	0	0	1	1.2
	good	9.4	2	4.1	8	11.0	18	21.4
	sickness	15.8	23	46.9	6	8.2	1	1.2
	strength	11.2	2	4.1	12	16.4	4	4.8
65. Swift...	arrow	1.3	0	0	0	0	2	2.4
	fast	22.2	0	0	25	34.2	15	17.9
	horse	2.8	1	2.0	1	1.4	6	7.1
	quick	11.7	1	2.0	22	30.1	2	2.4
	run	1.9	0	0	0	0	4	4.8
	runner	1.3	0	0	0	0	1	1.2
	slow	19.0	30	61.2	2	2.7	4	4.8
76. Bitter...	speed	2.0	1	2.0	5	6.8	0	0
	disagreeable	1.0	0	0	2	2.7	0	0
	distasteful	1.0	0	0	4	5.5	0	0
	gall	4.2	0	0	2	2.7	8	9.5
	medicine	3.7	0	0	0	0	3	3.6
	quinine	2.3	0	0	0	0	6	7.1
	sweet	30.5	31	63.3	8	11.0	12	14.3
81. Butter...	taste	6.6	1	2.0	17	23.3	3	3.6
	bread	20.6	17	34.7	4	5.5	18	21.4
	eatable	1.2	0	0	9	12.3	0	0
	food	6.3	1	2.0	14	19.2	3	3.6
	sweet	1.2	0	0	0	0	3	3.6
	yellow	8.0	0	0	0	0	18	21.4
	gladness	4.4	0	0	7	9.6	1	1.2
86. Joy.....	grief	1.8	4	8.2	0	0	0	0
	pleasure	12.1	1	2.0	13	17.8	7	8.3
	sadness	1.3	2	4.1	0	0	0	0
	sorrow	13.5	23	46.9	2	2.7	2	2.4

§ 5. PRACTICAL CONSIDERATIONS.

This method is so simple that it requires but little training on the part of the experimenter, and but little co-operation on the part of the subject. It is not to be assumed that every reaction obtained by it is a true and immediate association to the corresponding stimulus word; but we have found it sufficient for the purpose of the test if the subject can be induced to give, in response to each stimulus word, any one word other than the stimulus word itself. No attempt is made to determine the exact degree of co-operation in any case.

In the early stages of this investigation the reaction time was regularly recorded. The results showed remarkable variations, among both normal and insane subjects. In a series of twenty-five tests, made more recently upon normal subjects, ninety reactions occupied more than ten seconds, and fifty-four of the stimulus words elicited a ten-second response from at least one subject.*

It is noteworthy that these extremely long intervals occur in connection with reactions of widely differing values. That they are by no means limited to individual reactions is shown in Table III. by a group of selected reactions, all given by normal subjects.

TABLE III.

Word combination	Reaction time in seconds.	Value of reaction.
comfort—happiness	20	5.0%
short—long	11	27.9%
smooth—plane	16	2.3%
woman—lady	40	4.1%
hard—iron	12	2.4%
justice—judge	20	9.1%
memory—thought	20	8.1%
joy—pleasure	18	12.1%

It is apparent, even from a superficial examination of the material, that the factors which cause variations of reaction time, both in the normal state and in pathological states, are numerous and complex.

It has been the purpose of this study to establish as far as possible strictly objective criteria for distinguishing normal from abnormal associations, and for this reason we have made no attempt to determine by means of introspection the causes of variations of reaction time.

It would seem that the importance and magnitude of the problem of association time are such as to demand not merely a crude measurement of the gross reaction time in a large number of cases, but rather a special investigation by such exact methods as have been used by Cattell* and others in the analysis of the complex reaction. It would be impracticable for us to employ such methods in a study so extensive as this.

In view of these considerations we discontinued the recording of the reaction time.

* These tests were made by Dr. F. Lyman Wells, of the McLean Hospital, Waverley, Mass., and he has kindly furnished these data.

* Mind, Vol. XI, 1886.

If the association test is to be useful in the study of pathological conditions, it is of great importance to have a reliable measure of the associational value of a pair of ideas. Many attempts have been made to modify and amplify the classical grouping of associations according to similarity, contrast, contiguity, and sequence, so as to make it serviceable in differentiating between normal and abnormal associations.

In this study we attempted to apply Aschaffenburg's¹ classification of reactions, but without success. Our failure to utilize this system of classification is assigned to the following considerations: (1) Distinctions between associations according to logical relations are extremely difficult to define; in many cases there is room for difference of opinion as to the proper place for an association, and thus the application of a logical scheme depends largely upon the personal equation of the observer; that even experienced observers cannot, in all cases, agree in placing an association is shown by Aschaffenburg's criticisms of the opinions of other observers on this point.² (2) Logical distinctions do not bring out clearly the differences between the reactions of normal subjects and those of insane subjects; logically, the reaction *bath—ink*, which was given by a patient, might be placed in the class with the reaction *bath—water*, although there is an obvious difference between the two reactions. (3) Many of the reactions given by insane subjects possess no obvious logical value whatever; but since any combination of ideas may represent a relationship, either real or imagined, it would be arbitrary to characterize such a reaction as incoherent.

The criterion of values which is used in this study is an empirical one. As has already been explained (p. 40), every word contained in the frequency tables possesses a value of at least 0.1 per cent, and other words have a zero value. With the aid of our method the difficulty of classifying the reactions quoted above is obviated, as it is necessary only to refer to the table to find their proper values: the value of the reaction *bath—water* is 33.9 per cent, while that of the reaction *bath—ink* is 0.

¹ Experimentelle Studien über Association. Psychologische Arbeiten, Vol. I, p. 209; Vol. II, p. 1; Vol. IV, p. 235.

² Loc. cit., Vol. I, pp. 226-227.

Logically the combination *health—wealth* may be placed in any one of four classes, as follows:

health—wealth	{	intrinsic	{	causal dependence
				coordination
	{	extrinsic	{	speech reminiscence
				sound similarity

But since our table shows this association to have an empirical value of 7.6 per cent, it becomes immaterial which of its logical relations is to be considered the strongest. It is mainly important, from our point of view, to separate reactions possessing an empirical value from those whose value is zero.

§ 6. AN EMPIRICAL PRINCIPLE OF NORMAL ASSOCIATION.

On a general survey of the whole mass of material which forms the basis of the first part of this study, we are led to observe that *the one tendency which appears to be almost universal among normal persons is the tendency to give in response to any stimulus word one or another of a small group of common reactions.*

It appears from the pathological material now on hand that this tendency is greatly weakened in some cases of mental disease. Many patients have given more than 50 per cent of individual reactions.

It should be mentioned that occasionally a presumably normal subject has given a record very similar to those obtained from patients, in respect to both the number and the nature of the individual reactions. A few subjects who gave peculiar reactions were known to possess significant eccentricities, and for this reason we excluded their records from the thousand records which furnished the basis for the frequency tables; we excluded also a few peculiar records obtained from subjects of whom nothing was known, on the ground that such records would serve only to make the tables more cumbersome, without adding anything to their practical value. The total number of records thus excluded was seventeen.

It will be apparent to anyone who examines the frequency tables that the reactions obtained from one thousand persons fall short of exhausting the normal associational possibilities of these stimulus words. The tables, however, have been found to be sufficiently inclusive for the practical purpose which they were intended to

serve. Common reactions, whether given by a sane or an insane subject, may, in the vast majority of instances, safely be regarded as normal. As to individual reactions, they cannot all be regarded as abnormal, but they include nearly all those reactions which are worthy of special analysis in view of their possible pathological significance. What can be said further of individual reactions, whether normal or abnormal, will appear in the second part of this contribution.

(To be continued.)

THE FREQUENCY TABLES.

1. TABLE

1 accommodation	2 dine	1 kitchen	1 operating	1 stable
3 article	4 dining		2 ornament	36 stand
1 articles	26 dinner	1 lamp		3 stool
	5 dish	4 large	1 parlor	1 straight
1 basket	40 dishes	1 leaf	1 pitcher	1 strong
9 bench	1 dissection	1 leaves	4 plate	1 supper
14 board	1 dog	1 library	1 plates	
7 book		13 leg	1 plateau	1 tablecloth
5 books	63 eat	10 legs	1 polished	1 tea
1 boy	1 estables	2 linen		1 timber
1 bread	34 eating	1 long	1 refreshments	2 top
2 breakfast		2 low	3 rest	1 typewriter
2 broad	1 ferns		3 room	
1 brown	1 fête	1 Mabel	10 round	2 use
1 butter	5 flat	2 mahogany		3 useful
	7 floor	1 mat	1 school	1 utensil
2 cards	29 food	6 meal	1 serviceable	
1 celery	1 fork	4 meals	2 set	2 victuals
1 center	1 form	2 meat	1 shiny	
-267 chair	-75 furniture	1 mess	3 sit	1 wagon
7 chairs			2 sitting	1 whist
1 chemical	1 glass	2 nails	1 slab	1 white
57 cloth		1 napkin	1 smooth	1 wire
1 cockroaches	9 hard	1 number	1 soup	-76 wood
1 comfort	2 home		1 spiritualism	1 wooden
17 cover	3 house	1 oak	6 spoon	2 work
1 cutlery		1 object	2 spread	1 working
		1 old	9 square	2 write
11 desk	1 ink			6 writing

2. DARK

6 afraid	2 cold	2 fair	- 427 light	1 scare
	28 color	6 fear	1 lonely	1 shades
1 baby	1 colored	1 fearful	1 lonesome	2 shadow
1 bad	1 colorless	1 fearsome	1 lonesomeness	1 shadows
1 barks	1 coon	2 fright		1 sky
-76 black	1 curly		1 mahogany	1 sleep
2 blackness		1 ghost	4 man	1 sleeping
1 blank	1 day	1 ghosts	1 mice	1 space
2 blind	1 daylight	6 gloom	1 midnight	1 starry
2 blindness	1 dead	11 gloomy	6 moon	2 stars
5 blue	1 denseness	1 gray	1 moonlight	1 stillness
1 board	3 dim	1 green	1 mysterious	1 storm
1 boat	3 dimness	1 ground		1 stumbling
15 bright	2 dingy		1 nice	1 subject
4 brightness	3 dismal	5 hair	-221 night	1 sunlight
4 brown	1 dog	1 hall		
	1 door	1 hell	1 oblivion	1 thunder
1 candle	1 dreary	1 hole	1 obscure	1 tree
1 cart	4 dress	3 horse		1 twilight
2 cat	5 dungeon	2 house	1 parlor	
1 cell	1 dusk		1 prison	1 unseen
6 cellar	1 dusky	1 illumination		
1 close		2 invisible	5 red	1 walk
1 closet	4 evening		3 rest	3 weather
2 cloud	1 eye	1 lamp	22 room	9 white
2 clouds	2 eyes	1 lantern		1 woods
3 cloudy				

3. MUSIC

1 accordion	17 dance	1 harmonious	1 noisy	12 sing
3 air	1 dances	45 harmony	2 note	1 singer
1 amuse	13 dancing	1 hear	17 notes	48 singing
10 amusement	1 delight	2 heaven		1 soft
7 art	2 delightful	1 hurdygurdy	5 opera	1 softness
1 attention	3 discord	1 hymn	5 orchestra	1 solemn
1 attraction	1 drama		6 organ	—68 song
		1 idealism		6 songs
6 band	3 ear	21 instrument	2 paper	2 soothing
1 bassviol	1 ecstasy	5 instruments	1 pastime	—65 sound
7 beautiful	1 elevating	1 instrumental	—80 piano	2 sounds
2 beauty	1 enchantment		2 pianola	2 stool
7 Beethoven	1 enjoyable		1 pitch	1 strain
1 bell	1 enjoyed	11 jolly	7 play	2 strains
1 bird	13 enjoyment	1 joyful	8 playing	1 string
1 birds	5 entertaining		10 pleasant	2 study
1 book	3 entertainment	1 lesson	1 pleasantness	47 sweet
2 books	1 entrancing	1 light	5 pleasing	6 sweetness
2 box		1 line	31 pleasure	4 symphony
1 brightness	1 feeling	1 liveliness	1 poem	
	1 fiddle	1 lonely	4 poetry	2 talent
1 captivating	2 fine	1 loud	1 practice	6 teacher
1 cats	1 flowers	2 love	4 pretty	1 teaching
1 charm	1 flute		1 pupils	1 thought
1 charms	1 fun	1 man		2 time
2 charming		1 meditation	1 quiet	3 tone
2 cheerful	2 gaiety	24 melody		1 town
2 cheerfulness	1 gay	1 Mendelssohn	1 rack	2 tune
1 Chopin	1 genius	1 Merry Widow	1 racket	
1 chord	2 girl	1 Mozart	1 rhyme	21 violin
1 chords	1 gladness	1 Mr. B.	2 roll	2 voice
1 clarinette	1 Goethe	1 Mrs. E.	1 room	
1 classic	3 good	3 musician		3 Wagner
2 classical	1 guitar	1 mute	2 sadness	1 way
2 composer			1 scale	1 window
1 company	2 hall	6 nice	2 Schubert	1 words
2 concert	5 happiness	1 nocturne	1 score	1 worship
1 conductor	2 happy	16 noise	5 sheet	
			1 sheets	1 Yankee Doodle

4. SICKNESS

1 affliction	2 disabled	2 home	1 operation	2 sorry
1 age	3 discomfort	1 horrible	1 oranges	1 stomach
3 ailing	29 disease	9 hospital		2 strength
2 ailment	4 distress		36 pain	1 suffer
1 air	62 doctor	48 ill	1 painful	12 suffering
1 anxiety	1 dread	—71 illness	2 pale	1 summer
3 appendicitis	1 dreariness	1 incompetence	7 patient	2 sympathy
1 aunt		1 inconvenience	1 patients	
	1 enjoyed	1 indisposition	1 people	1 terror
1 baby	1 ether	1 infirmity	1 person	1 together
15 bad	1 exhaustion	1 insanity	7 physician	20 trouble
54 bed		2 invalid	1 pill	1 trying
1 Bertha	1 family		1 pills	6 typhoid
1 better	3 father	1 K.	1 plague	
1 body	1 fear		1 pleasantness	2 uncomfortable
1 business	4 feeble	1 low	5 pneumonia	1 unhappiness
	1 feel	1 lying	1 poverty	1 unhappy
1 calamity	1 feeling			4 unhealthy
1 care	9 fever	2 malady	1 quiet	5 unpleasant
2 child	1 fevers	1 man	1 quietness	2 unpleasantness
1 cold	1 fracture	8 measles		11 unwell
1 condition	1 fright	1 medication	3 recovery	
2 consumption		29 medicine	1 relapsing	1 want
2 contagious	1 gloom	1 melancholy	1 rheumatism	1 weak
1 convalescence	1 gravel	1 mine	1 room	11 weakness
2 convalescing	2 grief	3 misery		2 wealth
3 cure	1 grunting	3 misfortune	7 sad	1 weariness
		3 mother	9 sadness	1 weary
1 danger	2 hard		3 serious	49 well
—115 death	1 hatefulness	2 nervousness	4 severe	1 white
1 dietary	5 headache	1 neuralgia	1 sigh	1 worried
8 diphtheria	—142 health	15 nurse	1 sore	1 worriment
1 disability	4 healthy	2 nursing	24 sorrow	

5. MAN

2 adult	1 companion	1 homely	6 masculine	1 self
1 affection	1 company	1 horrible	1 mason	4 sex
1 age	1 coon	4 horse	1 mind	1 shirt
1 alive	1 crank	1 house	1 might	1 shoes
12 animal	8 creature	22 human	1 minister	1 short
1 animals	1 cross	1 humanity	1 minor	1 smoking
1 animate		4 husband	1 misery	1 stern
2 appearance	1 devil		1 money	1 stout
	2 doctor	1 individual	1 monkey	1 street
1 baby	1 dress	1 insane	1 Mr. D.	32 strength
2 bad		1 institution	1 Mr. H.	8 strong
1 beard	1 educator	1 intellectual	1 Mr. N.	1 sweetheart
2 beast	1 existence	1 intelligent	3 Mr. S.	
19 being			1 muscular	1 Taft
3 biped	1 fakir	1 janitor		12 tall
1 blond	1 false	1 Joe	1 N.	1 thought
3 body	1 family		1 nature	6 trousers
-44 boy	15 father	1 labor	1 Ned	1 true
1 brain	3 female	2 laborer	1 nice	
1 bright	2 flesh	7 lady	3 noble	1 unfeminine
1 brightness	2 form	11 large	1 nuisance	1 use
3 brother	1 fraud	4 life		1 V.
1 brotherhood	1 Fred	1 light	1 out	1 voter
1 brute	2 friend	1 limb		
1 bum		2 living	1 papa	1 walk
6 business	1 gentle	1 lord	1 passion	1 wedding
	7 gentleman	1 love	2 people	1 whiskers
3 cane	6 girl		30 person	5 wife
1 certain	1 glacier	1 machine	1 pleasure	1 wise
2 Charles	10 good	1 maiden	2 policeman	-394 woman
10 child	1 greatness	-69 male	1 politician	17 work
2 children	1 grown	1 mammal	5 power	1 works
1 Christian	1 growth	1 manhood	1 professor	1 worker
1 clergyman		5 mankind	1 prosperity	3 working
7 clothes	1 hair	1 manliness	1 provider	
2 clothing	7 hat	2 manly		2 young
3 coat	2 help	1 marriage	1 Roosevelt	
1 comfort	1 home	1 married	1 ruler	

6. DEEP

3 abyss	4 darkness	1 heavy	1 precipice	1 story
1 altitude	1 dense	5 height	4 profound	1 strong
1 around	31 depth	37 high		1 study
	1 depths	32 hole	1 ravine	1 sunken
3 below	1 diameter	13 hollow	1 reaching	1 surface
1 beneath	1 dig		13 river	1 swimming
1 black	8 distance	3 large	1 rocks	
3 blue	3 ditch	8 length		1 thick
1 bottom	1 doleful	2 level	1 safety	1 thickness
1 bottomless	27 down	4 light	1 scare	1 thin
1 bowl	1 dread	18 long	90 sea	2 thinking
1 breath		51 low	1 sewer	14 thought
2 broad	1 earth		1 shade	2 thoughts
1 brooding	1 extension	2 measure	1 shady	1 tranquil
1 brook		1 mighty	-180 shallow	1 trench
	2 fall	1 mind	1 sharp	
2 cave	3 falling	4 mine	1 ship	1 under
1 Cayuga	3 far		1 short	
1 chair	5 fathomless	3 narrow	1 sincere	1 valley
2 chasm	1 fear		2 sink	2 vast
1 cellar	1 full	-93 ocean	1 sleep	
1 classic		1 organ	1 smooth	1 wading
1 clear	1 gloomy		1 sorrow	-134 water
1 cliff	1 good	1 philosophy	2 sound	44 well
	1 gorge	1 pit	6 space	1 wet
3 danger	1 great	1 pond	2 spacious	12 wide
5 dangerous	1 ground	1 pool	7 steep	2 width
28 dark				

7. SOFT

1 apple	1 dark	3 gentle	1 membrane	3 snap
7 baby	1 dough	1 girl	2 mild	7 snow
2 ball	6 down	1 glove	1 moist	6 soap
1 beautiful	8 downy	3 good	2 moss	1 soup
12 bed	1 dress	1 grasp	15 mud	22 sponge
1 boiled	1 drink	1 grass	10 mush	1 sponges
1 brain	7 earth	3 ground	1 mushing	8 spongy
4 bread	1 ease	1 gum	12 mushy	1 squash
1 breeze	34 easy	3 hair	4 music	1 sticky
12 butter	4 egg	3 hand	4 nice	1 strong
1 cake	2 eggs	1 hands	1 palatable	1 substance
1 candy	1 elastic	285 hard	2 peach	8 sweet
1 care	1 eyes	1 harsh	2 pear	1 sweetness
1 carpet	2 feather	1 hazy	2 pillow	8 tender
1 cat	24 feathers	1 idiot	2 pillows	1 texture
1 cement	1 feathery	1 jelly	8 pliable	1 timid
1 clay	1 feel	2 kitten	2 plush	1 tomatoes
1 clean	8 feeling	1 large	4 pudding	4 touch
3 cloth	1 felt	8 light	4 putty	1 uncooked
1 clothes	5 fine	1 lightly	1 quality	15 velvet
2 coal	1 firm	2 liquid	3 quiet	2 voice
1 cold	3 flabby	2 loose	3 rubber	1 wadding
2 color	1 fleece	5 loud	1 sand	1 warm
2 comfort	1 flesh	5 low	1 satisfactory	8 water
5 comfortable	7 flexible	1 maple	1 seat	1 watery
1 comply	1 floor	1 marshes	10 silk	1 wax
1 consistency	1 fluffy	1 medium	2 slow	3 wet
28 cotton	2 food	11 mellow	1 slushy	3 white
1 crabs	1 foolish		27 smooth	8 wool
2 cream	1 form			1 woolen
1 creeping	3 fruit			5 yielding
25 cushion	1 fun			
	4 fur			

8. EATING

1 abstain	1 enjoyable	2 ice-cream	1 olives	2 slow
1 abstinence	1 enjoying	4 indigestion	1 oranges	1 slowly
2 action	2 enjoyment			2 soup
28 appetite	1 enough	1 knives	2 palatable	4 starving
4 apple	1 etiquette	1 lemons	3 people	2 steak
6 apples		2 life	8 pie	2 stomach
1 assimilation	3 fast	4 live	7 pleasant	1 strawberries
1 biting	5 fasting	6 living	1 pleasantness	2 strength
46 bread	1 fattening	1 lobster	10 pleasure	1 substance
7 breakfast	2 feasting	1 lobsters	1 plenty	2 sufficient
1 butter	1 feed	8 lunch	1 poor	1 sugar
4 cake	5 feeding		1 potato	1 surfeiting
3 candy	2 filling	1 masticate	2 potatoes	1 sustaining
1 Chacona's	1 finishing	11 masticating	1 provisions	2 sustenance
1 chew	3 fish	5 mastication	1 pudding	6 swallow
27 chewing	1 flavor	1 matter	1 quick	5 swallowing
3 chicken	1 flesh	4 meal	1 quickly	
1 coffee	170 food	10 meals		21 table
1 Commons	2 fork	11 meat	2 refreshing	1 talking
4 consuming	1 forks	1 meeting	1 refreshment	7 taste
3 cooking	8 fruit	1 mild	1 Reisenweber	2 tasting
2 cream	4 full	1 milk	1 relief	3 teeth
	1 gluttonish	1 more	2 relish	1 thinking
1 devour	23 good	1 motion	2 resting	1 throat
2 devouring	1 gormandizer	2 mouth	1 room	1 tongue
2 diet	1 gratifying	1 movement		
1 diets	8 habit	1 much	1 sandwich	1 use
1 digest	9 health	1 myself	12 satisfaction	1 utensils
7 digesting	1 healthful	4 necessary	4 satisfied	3 vegetable
10 digestion	1 heartily	7 necessity	1 satisfy	8 vegetables
2 dine	1 hearty	3 nice	5 satisfying	4 victuals
1 dining	2 hot	1 nourish	1 sick	
21 dinner	1 house	2 nourishing	1 sit	2 want
4 drink	19 hunger	11 nourishment	1 sitting	1 water
186 drinking	44 hungry		1 sleep	1 watermelon
1 dyspepsia			17 sleeping	2 well
				1 work

D. MOUNTAIN

1 abrasion	1 dirt	2 hilly	1 Mount Pleasant	1 shadows
4 Adirondacks	1 distance	1 Himalaya	1 Mount Shasta	1 shooting
2 air	1 ditch	5 hollow	1 Mount Wilson	1 size
3 Alleghany		1 Holyoke		2 sky
6 Alps	3 earth	1 home	2 object	1 slope
2 altitude	9 elevatton	1 horse	1 Owl's Head	10 snow
1 attractive		1 Hudson		12 steep
1 automobile	1 fear	2 huge	16 peak	1 steepness
	1 field		1 peaks	2 stone
1 Bald	1 Flashman	1 impressive	1 pictures	1 stones
1 beautiful	1 foliage	1 incline	1 Pike's Peak	2 stream
2 beauty	1 fountain	1 island	1 pines	4 summit
2 big			11 plain	2 Switzerland
1 Blanc	1 Galetton	1 Kipling	1 plateau	
1 Bluff	1 geography	1 knoll	3 pleasure	1 tall
1 Breckenridge	1 grand		1 pointed	1 Terrace
	3 grandeur	8 lake		5 top
1 camping	1 granite	6 land	1 railway	2 tree
8 Catskills	1 grass	1 landscape	3 range	17 trees
2 cliff	1 great	4 large	1 ranges	
1 cliffs	4 green	1 level	8 river	1 up
1 Clifton	1 ground	1 lofty	10 rock	
9 climb		2 low	6 Rockies	2 vale
27 climbing	1 heath	1 lowland	18 rocks	90 valley
1 close	73 height		5 rocky	5 valleys
3 clouds	2 heights	1 Monodonack	1 rough	1 Vermont
1 cone	246 high	1 mound		2 view
5 country	1 highlands	1 Mount Ivy	1 scene	2 volcano
1 crevice	2 highness	1 Mount Kear-	3 scenery	
	184 hill	sarge	1 sea	1 Washington
1 descend	82 hills	1 Mount McKin-	1 seas	5 White
2 descending	2 hilltop	ley	1 seashore	1 wood
1 desert	1 hilltops			3 woods

10. HOUSE

15 abode	1 corridor	1 habitable	2 mouse	1 star
1 alley	42 cottage	5 habitation		1 steps
3 apartment	3 cover	1 happiness	1 new	7 stone
	1 covering	2 height		1 stoop
1 background		3 high	1 object	2 store
74 barn	1 dark	3 hill	1 old	7 street
1 Bay Ridge	1 den	103 home	1 ours	8 structure
2 beautiful	2 dog	1 homeless		
1 Belknap	1 domestic	4 hospital	1 palace	1 tabernacle
4 big	1 domicile	1 hot	1 painting	1 table
1 blinds	16 door	5 hotel	1 Pasadena	1 tall
3 boards	1 doors	1 hovel	11 people	1 telescope
2 boat	3 dwell	2 hut	2 piazza	1 tenant
1 box	68 dwelling		1 picture	2 tenement
23 brick		1 inhabitant	6 place	3 tent
5 bricks	1 enclosure	1 inhabited	1 pleasant	1 timber
2 brown	1 erection	1 inmates	3 pretty	5 top
2 build		1 into	1 property	1 town
78 building	4 family		3 protection	2 tree
2 bungalow	1 fancy	1 joy		1 trees
	2 farm		4 red	1 tumbler
8 cabin	1 farmer	10 land	1 refuge	
1 camp	1 fence	1 lake	19 residence	2 villa
1 carpenter	1 field	24 large	2 resident	1 village
1 carpet	1 fire	3 lawn	1 restful	
4 cattle	1 floor	1 lemon	1 road	1 walls
1 cellar	1 form	1 Leonia	12 roof	3 warm
2 chair	1 foundation	2 life	9 room	1 wealth
1 chamber	5 frame	33 live	8 rooms	1 well
1 chicken	1 friends	19 living		9 white
5 chimney	1 furnace	18 lot	1 Sage	1 Whittier
1 church	1 furnishing	1 lots	2 school	1 wide
2 city	11 furniture	3 lumber	1 sea	1 willow
2 clean			1 shanty	9 window
1 closed	10 garden	2 man	5 shed	5 windows
1 college	1 grandmother	14 mansion	22 shelter	31 wood
9 comfort	1 great	1 material	2 sky	1 wooden
1 comforts	2 green	1 mine	2 small	1 workman
3 comfortable	3 ground	1 mortgage	1 spacious	1 worship
1 contractor	1 grounds	1 Mountain	4 square	
		House	3 stable	10 yard

11. BLACK

1 agreeable	36 darkness	2 hair	1 obscure	2 somber
8 blue	4 death	3 hat	1 orange	1 soot
3 board	1 dense	1 heavy		4 sorrow
2 book	1 desolate	1 hog	4 paint	1 space
2 bright	2 dirty	1 horror	1 paper	1 spectrum
1 buggy	1 disagreeable	5 horae	1 pen	1 stocking
	1 dislike		2 pink	1 stockings
	4 dog	1 impenetrable	1 pipe	1 suit
8 cat	1 domino	14 ink	1 pit	
1 chair	29 dress			1 table
1 charcoal	2 dye	1 lack	1 radiator	1 tar
17 cloth		12 light	4 red	1 terror
4 clothes	1 earth		1 ribbon	1 tie
1 cloud	1 ebony	1 mammy	1 robe	
1 clouds		2 man		1 umbrella
2 cloudy	1 face	1 Mrs. B.	1 sad	
3 coal	2 fear	2 mournful	2 sadness	1 velvet
3 coat	1 figure	17 mourning	1 sack	
129 color	1 flecked	1 mud	1 shady	2 wall
1 colored	1 floor	7 negro	2 sheep	1 water
3 colorless	1 funeral	1 negroes	4 shoe	439 white
1 coon		6 nigger	1 shoes	1 wonder
2 crepe	2 gloomy	51 night	1 sign	1 wood
1 curtain	1 gown	1 nothing	2 skirt	
	2 gray		1 sky	2 yellow
172 dark	7 green			

12. MUTTON

9 animal	1 delicious	1 goat	1 Mary	1 soft
1 animals	6 dinner	9 good	257 meat	2 soup
1 appetite	2 disagreeable	1 grass	1 mouse	1 stale
1 Australia	1 dish	2 grease	1 muttonhead	3 steak
	2 dislike	1 greasy		2 stew
1 baa	1 disliked		2 nice	2 strong
97 beef		2 ham		
1 bony	14 eat	1 hate	1 old	4 table
1 breakfast	7 eatable	2 head		6 tallow
15 broth	10 eating	1 horrid	1 pastures	3 tender
1 brown			1 peas	1 thinking
2 butcher	7 fat	1 indigestion	2 pig	6 tough
	2 field	1 knife	3 pork	
2 calf	10 flesh		1 rare	1 uncle
1 cattle	1 flock		4 roast	
3 cheap	30 food	121 lamb		30 veal
24 chop	1 fork	2 lambs	1 sauce	1 vegetables
33 chops	1 fowl	5 leg	204 sheep	1 vegetarian
2 cow			1 smell	4 wool

13. COMFORT

1 agony	1 driving	1 justice	1 please	11 solid
1 annoyance	65 ease	1 kindness	77 pleasure	3 solitude
1 bad	11 easiness	1 lamp	1 plentifulness	2 soothing
42 bed	61 easy	2 laziness	1 plenty	5 sorrow
4 blanket	1 eating	1 lazy	1 Polly	1 speak
1 book	1 enjoying	6 leisure	1 post	1 spirit
1 books	6 enjoyment	1 less	6 quiet	1 spread
1 canoe	1 feather	1 life	1 quietness	1 suffering
4 care	1 feeling	1 like	7 quilt	1 sweet
31 chair	2 fireplace	2 living	1 rain	1 swing
1 cheer	2 fireside	1 loneliness	1 relief	2 table
1 children	1 friends	6 lounge	53 rest	1 taken
1 cloth	1 God	1 luxurious	1 restful	1 tea
4 comfortable	5 good	23 luxury	1 restfulness	1 thankfulness
1 comforter	1 goodness	1 man	5 resting	1 tired
2 consolation	1 great	1 mansion	1 rich	1 trials
1 console	1 grief	1 miserable	3 rocker	1 trouble
1 consoling	7 hammock	9 misery	1 safety	1 uncomf
2 content	50 happiness	9 money	1 salary	10 uncomfortable
4 contentment	2 hard	3 mother	4 satisfaction	3 uneasiness
2 convenience	7 hardship	1 neatness	3 satisfied	3 uneasy
1 cozy	1 healing	4 nice	1 security	1 unrest
9 couch	15 health	1 none	1 settled	1 unwell
1 cover	3 help	2 nurse	1 sick	6 warm
1 covering	63 home	4 pain	3 sickness	4 warmth
4 cushion	4 house	2 palace	1 sit	6 wealth
1 cushions	1 household	1 patient	4 sitting	3 well
1 davenport	1 I	12 peace	10 sleep	1 well-being
1 death	1 idleness	1 people	1 slippers	1 wine
1 delight	1 ill	2 pillow	1 slumber	1 wish
2 desirable	9 joy	1 pipe	1 smoke	1 woman
24 discomfort		1 playing	1 smoking	1 wool
1 disease		9 pleasant	5 sofa	1 work
1 displeasure			2 soft	
4 distress			1 solace	1 ye

14. HAND

2 anatomy	11 feel	2 instrument	1 narrow	1 shapely
43 arm	5 feeling	1 jewel	2 necessity	1 shop
2 arms	35 feet	1 kindness	1 nice	1 shoulder
1 ball	2 fellowship	1 knife	1 nimble	4 skin
3 beautiful	39 finger	1 knitting	1 nose	1 slim
3 black	83 fingers	1 labor	1 object	8 small
1 bleeding	1 fist	1 large	4 organ	1 soap
48 body	19 flesh	4 leg	5 palm	8 soft
1 bone	204 foot	1 legs	1 part	1 something
1 bones	1 form	1 lemon	2 paw	1 sore
1 busy	1 formation	2 life	1 pencil	6 strength
2 cards	1 friend	48 limb	1 perfect	3 strong
1 clean	1 friendship	1 limbs	10 person	1 support
1 clock	1 give	1 long	1 piano	1 system
1 convenience	20 glove	1 love	1 pen	1 table
1 cradle	5 gloves	2 machine	3 power	1 thread
1 cunning	1 good	1 maid	3 pretty	9 touch
1 dexterity	8 grasp	3 man	1 purity	2 two
1 diligence	1 greeting	1 manipulation	1 reach	12 use
1 dissecting	8 grip	14 member	1 rest	24 useful
1 do	1 handle	1 mind	11 right	4 usefulness
2 doing	3 handy	1 mine	23 ring	1 watch
1 dog	1 head	4 mouth	2 rings	1 woman
1 ear	2 heart	4 muscle	1 satisfaction	49 work
1 elbow	6 help	2 nail	1 servant	15 white
6 extremity	2 helper	1 nails	2 sew	4 wrist
7 face	1 helping	1 name	2 sewing	3 write
1 fat	3 hold		9 shake	11 writing
	1 holding		1 shape	1 you
	2 human			

15. SHORT

2 abbreviated	1 down	1 lake	1 petticoat	1 strong
1 age	1 drawn	2 large	1 pin	1 stubborn
2 arm	3 dress	2 leg	1 pity	9 stubby
1 baby	2 dumpy	18 length	1 plant	4 stumpy
1 beach	11 dwarf	1 lesson	1 plants	1 stunned
1 beam	1 dwarfs	1 lessons	1 pony	1 stunted
1 board	2 easy	5 life	2 post	1 sufficient
3 boy	1 elongated	15 little	2 pygmy	1 sum
1 brevity	1 extension	1 line	8 quick	1 sweet
1 brick	4 fat	1 lived	1 quickly	168 tall
7 brief	1 finger	11 low	1 road	6 thick
1 broad	1 flowerpot	1 lowly	1 round	1 thin
1 build	2 foot	20 man	1 session	8 time
1 C.	2 friend	3 measure	1 sister	1 tiny
1 cake	11 girl	1 measurements	1 shallow	1 Tom Thumb
1 chair	1 good	2 medium	5 size	1 tree
1 change	1 grandmother	1 midget	1 skirt	1 unpleasant
4 child	5 grass	1 millimeter	1 sleek	1 useless
1 children	2 hair	1 minus	1 slight	1 vacation
1 clock	1 happiness	1 Miss K.	1 slightly	1 waisted
1 cloth	13 height	1 money	136 small	3 walk
1 comfort	4 high	1 mother	2 speech	1 want
1 compact	1 hour	6 myself	1 square	2 wanting
1 cut	3 hours	1 name	1 staccato	1 water
1 cylinder	5 inch	1 narrow	2 stature	1 well
1 dainty	2 journey	1 needle	2 stem	1 wide
4 day	1 Karl	1 not	8 stick	6 woman
2 deficient	1 lacking	1 out	2 stop	1 wood
1 dimension	4 lady	6 pencil	1 story	1 worm
1 diminutive		3 people	24 stout	1 you
2 diminutive		15 person	1 strawberries	
1 disagreeable			2 street	
10 distance			1 string	
1 dot				

16. FRUIT

2 acid	1 easy	3 health	25 orange	1 salad
2 appetite	62 eat	3 healthy	20 oranges	5 seed
157 apple	33 eatable	1 home	6 orchard	1 sickness
102 apples	15 eatables	1 Italians	1 outcome	4 sour
1 article	25 eating	1 invigorating	2 palatable	1 south
1 bake	1 edible	1 jam	17 peach	1 spring
11 banana	1 eggs	6 juice	22 peaches	1 stalk
8 bananas	2 enjoyment	5 juicy	24 pear	1 stand
7 berries	1 figs	1 knife	11 pears	1 stems
1 berry	1 fish	2 lemon	1 picking	1 store
1 blackberries	1 flesh	1 liked	1 pie	2 strawberries
2 bread	3 flower	1 love	2 pineapple	1 strawberry
2 cake	3 flowers	3 luscious	1 plant	2 summer
1 can	1 fond	2 luxury	1 plants	1 swallow
1 candies	22 food	4 meat	2 pleasant	24 sweet
3 candy	1 fresh	1 medicine	1 pleasure	1 sweets
2 cherries	2 garden	1 melon	2 plenty	3 table
2 cherry	24 good	1 milk	2 plum	5 taste
1 country	2 grain	1 nourishing	2 produce	25 tree
1 currants	4 grape	2 nourishment	1 prune	27 trees
1 dainty	14 grapes	5 nice	1 raspberries	75 vegetable
2 delicacy	1 grapefruit	2 nutritious	1 raspberry	28 vegetables
9 delicious	1 green	2 nuts	1 red	
1 desire	1 groves		1 result	
1 digest	1 grow		9 ripe	1 watermelon
1 digestion	1 grows		1 ripeness	1 wine
	2 growth			

17. BUTTERFLY

1 air	6 cocoon	20 flying	1 lilies	1 soul
1 airiness	1 cocoons		1 little	1 sparrow
2 airy	4 collection	1 gaudy		1 speckled
24 animal	12 color	1 gauze	1 meadows	9 spider
2 animals	8 colors	2 gay	1 metamorphosis	2 spotted
2 ant	3 colored	2 girl	4 miller	5 spring
	2 country	2 gnat	1 monarch	17 summer
1 beast	1 cricket	3 golden	3 mosquito	1 sun
24 beautiful		1 good	1 motion	5 sunshine
20 beauty	1 daisy	2 grace	30 moth	1 swallow
31 bee	1 dish	1 graceful	1 moths	1 sweet
4 bees	1 dove	1 grass	1 mountains	1 swift
5 beetle	1 dress	5 grasshopper	1 mourning cloak	
64 bird	1 dust	2 grasshoppers		1 temporary
10 birds		5 grub	2 nature	1 tree
2 black	1 eagle		4 net	1 two
1 blossom	1 ease	1 handsome	1 nets	
1 blue	1 ephemeral	1 happy	2 nice	1 useless
2 bread		1 high		
1 bright	1 fairy	1 horse	1 orange	2 vanity
2 brilliant	2 field	1 human	1 outdoors	1 variegated
1 brown	1 fields			
1 bush	1 firefly	1 idler	1 pancake	11 wasp
3 butter	6 flies	261 insect	1 pig	2 white
6 buttercup	2 flight	2 insects	2 pigeon	1 wind
11 bug	1 flippant		1 plumage	11 wing
1 bugs	1 flittering	1 Japanese	1 powder	31 wings
1 bumblebee	1 flitting	1 kite	39 pretty	1 word
	1 flits			12 worm
1 cabbage	13 flower		1 red	2 worms
37 caterpillar	12 flowers	1 lady		
1 caterpillars	2 flutter	3 lepidoptera	2 small	37 yellow
1 chase	1 fluttering	5 light	1 snakes	
3 chrysalis	34 fly	2 lightness	1 snare	

18. SMOOTH

2 apple	3 face	1 kind	5 pleasant	2 small
	1 fair		1 pleasing	1 snake
1 ball	1 feeling	1 lake	1 plum	79 soft
1 basin	8 fine	2 lawn	5 polished	1 softness
2 bed	2 finished	1 lens	1 pressed	1 sphere
9 board	14 flat	52 level		1 stone
1 butter	2 flexible	1 lightly	1 quality	2 straight
	15 floor	1 lovely	1 queer	1 street
4 calm	1 folded			1 stroke
1 carpet	2 fur	1 machinery	1 razor	25 surface
1 character		1 mahogany	2 river	
1 cheek	56 glass	10 marble	4 road	29 table
1 chip	4 glassy	1 mercury	1 roads	1 thin
1 circus	1 glazed	1 mild	2 roof	1 thought
2 clean	3 glide	1 mirror	277 rough	1 tidy
3 clear	1 gliding	1 molasses	2 round	1 tomato
3 cloth	11 glossy		1 rubber	1 tongue
1 clothes	2 good	1 narrow	1 rugged	4 touch
2 coarse	1 goods	4 nice	1 rule	1 tranquil
1 coat	1 grand	1 nicely	1 running	
1 country	3 grass			2 uneven
1 course	1 grease	1 oyster	1 sailing	
2 cream	4 ground		1 sandpaper	29 velvet
1 cube		1 paint	2 satin	1 velvety
		9 paper	1 sea	1 very
1 deceitful	2 hair	2 paste	1 shape	
1 deep	2 hand	1 pat	1 sharp	5 wall
1 desk	41 hard	1 path	1 shave	1 walls
1 done	1 harmonious	1 pebble	4 shiny	10 water
1 dry	4 harsh	1 person	4 silk	1 wave
		1 piano	1 silken	1 window
2 ease	14 ice	1 placid	5 skin	3 wood
12 easy	13 iron	17 plain	2 sleek	1 work
30 even	1 ivory	23 plane	3 slick	1 wrinkled
1 evenness		1 planed	4 slippery	1 wrinkles

19. COMMAND

1 ability	1 dislike	1 harshly	12 obedience	1 something
1 act	27 do	1 haughty	2 obedient	3 speak
1 acting	3 doing	1 head	230 obey	1 spoken
1 anger	2 domineer	1 him	1 obeyed	1 stamina
1 answer	2 domineering	1 holy	30 officer	1 statement
1 anything	2 done	1 honorable	1 only	7 stern
1 appeal	2 don't	1 horse	171 order	3 strength
1 appearance	1 door		2 ordering	1 strict
16 army	2 drill	1 I	9 orders	3 strong
1 arrogance	1 driver	1 immediately	1 parents	1 stubborn
2 ask	5 duty	3 imperative	1 peace	1 superintend
2 asking		4 imperious	2 people	1 superior
1 athletics	1 earnestness	1 independent	2 peremptory	1 supervisor
3 attention	1 easy	1 insist	1 perfect	1 surly
14 authority	1 eat	1 instant	1 person	1 surrender
	1 effort	1 institution	1 plead	2 talk
1 baseball	1 employ	2 instruct	1 policeman	1 teach
1 Bible	1 employees	1 instruction	10 power	14 teacher
1 bid	1 enforce	1 intelligence	2 powerful	1 teachers
6 boss	1 entreat		1 praise	1 teaching
1 boy	7 entreaty	1 judge	1 proper	15 tell
	1 exclamation			1 telling
7 captain	1 exertion	1 knowing	1 question	3 temper
2 charge	1 experience		1 quick	1 temperament
2 chief		1 labor		1 thee
1 church	1 father	1 language	2 refuse	1 them
1 combine	1 firm	2 law	1 regiment	2 think
1 combined	1 forbid	1 laziness	1 reply	1 thinking
5 come	7 force	2 lead	2 reprimand	1 thoughtfulness
5 commander	1 forced	1 leader	11 request	1 threat
2 commandment	1 foreman	1 lieutenant	5 respect	2 told
2 company		2 listen	1 respond	
1 compel	1 gain	2 loud	1 retreat	1 uncomfortable
8 control	43 general	1 love	3 right	1 upright
1 cross	1 gentleness		2 rule	
	1 gently	1 madam	1 ruling	6 voice
1 dare	1 Germany	9 man	1 running	1 vow
18 demand	1 give	2 master		
1 demanding	25 go	1 masterful	1 say	1 wagon
2 desire	1 God	3 military	1 saying	1 wife
2 determined	1 God's	2 mind	2 school	3 will
3 dictate	2 good	1 mother	1 severe	1 willing
1 dictatorial	1 govern	1 move	1 shalt	2 words
2 dignity	1 grand	1 must	1 ship	2 work
2 direct			16 soldier	1 wrong
1 disability	4 halt	1 noble	6 soldiers	
2 discipline	4 harsh	1 nuisance		3 you

20. CHAIR

4 arm	1 cushions	1 idleness	1 people	56 sitting
4 article		1 implement	3 person	1 size
	9 desk	1 joiner	1 place	6 sofa
1 back	7 case		1 placed	5 soft
1 beauty	6 easy	3 large	1 plant	1 spooning
1 bed		7 leg	1 platform	1 stand
17 bench	1 fatigue	11 legs	1 pleasant	38 stool
1 book	10 floor	3 lounge	1 pleasure	1 stoop
1 boy	1 feet	3 low	1 posture	1 study
2 broken	1 foot	1 lunch		1 support
4 brown	1 footstool		1 reading	
1 bureau	1 form	3 mahogany	45 rest	191 table
	83 furniture	1 massive	3 resting	1 tables
3 cane		1 mission	17 rocker	1 talk
1 caning	1 Governor	5 Morris	15 rocking	1 teacher
1 careful	Winthrop	1 myself	9 room	1 timber
1 carpet			2 rounds	1 tool
1 cart		2 necessity	1 rubber	
1 color	1 hair		3 rung	1 upholstered
21 comfort	5 hard	2 oak	127 seat	1 upholstery
8 comfortable	2 hickory	1 object	5 seated	2 use
3 convenience	4 high	1 occupy	2 seating	3 useful
5 couch	2 home	1 office	3 settee	1 white
1 crooked	3 house		107 sit	49 wood
12 cushion				6 wooden

21. SWEET

5 agreeable	1 dinner	1 hunger	33 nice	1 sharp
1 appetizing	1 dog	1 Huyler's	1 orange	1 sickish
11 apple	1 dreams	1 insipidity	2 oranges	2 sixteen
3 apples	1 E.	2 kiss	9 palatable	6 soft
3 beautiful	2 cat	1 limited	3 peach	1 soothing
50 bitter	1 elegant	1 lovely	1 peaches	201 sour
1 black	1 eyes	1 loving	3 perfume	1 stuff
1 breath	1 face	2 low	2 pie	224 sugar
1 candies	2 flavor	1 Mary	1 plausible	2 syrup
22 candy	2 flower	1 mellow	31 pleasant	57 taste
1 cherries	3 flowers	1 melody	4 pleasing	4 tasteful
1 child	1 fresh	2 milk	1 pleasurable	2 tasting
3 chocolate	9 fruit	1 molasses	1 pleasure	11 tasty
1 chocolates	1 gentle	1 mouth	1 plum	1 tea
2 clean	6 girl	8 music	1 preserves	2 toothsome
1 confectionery	26 good	1 musty	1 quality	1 ugly
1 cream	2 harsh	1 name	1 saccharine	1 unpleasant
1 cunning	12 honey	1 nausea	3 salt	1 very
7 delicious			1 salty	1 voice
1 dessert				1 wholesome

22. WHISTLE

1 act	1 crow	5 holler	1 person	1 sounds
1 action	2 cry	1 hollow	1 piercing	3 steam
7 air	1 cuckoo	4 horn	7 pipe	1 steamboat
3 alarm	3 dance	1 humming	2 pleasure	1 stick
1 annoyance	1 dear	6 instrument	1 police	4 talk
2 attention	1 disagreeable	2 joy	6 policeman	1 telephone
1 automobile	1 distant	1 lad	1 postman	1 throat
1 bad	7 dog	3 laugh	1 postman's	7 tin
2 bell	1 drink	1 letter-carrier	1 pretty	1 tool
15 bird	1 dumb	5 lips	4 pucker	1 top
3 birds	1 ear	5 locomotive	1 quiet	4 toy
1 blast	3 echo	3 long	2 racket	6 train
5 blew	1 effort	27 loud	1 report	1 tree
96 blow	15 engine	1 low	1 running	2 trumpet
6 blowing	2 factory	1 man	1 scream	15 tune
2 blows	3 file	1 mash	1 screech	1 umpire
2 boat	1 fingers	1 melodious	5 sharp	1 unpleasant
66 boy	3 fire	1 metal	4 shout	1 vibration
5 boys	5 flute	2 mill	1 shrieking	3 voice
1 breath	1 fly	1 mine	26 shrill	1 warble
1 bright	2 Franklin	1 mocking	1 shrillness	1 warning
1 brother	2 fun	27 mouth	3 signal	1 whisper
1 buzzing	1 funny	44 music	1 sang	1 whispering
26 call	1 Galton	3 nice	75 sing	8 willow
2 calling	1 girl	1 nightingale	4 singing	10 wind
2 cars	1 habit	173 noise	1 soft	1 wood
1 cent	3 happiness	3 noisy	1 softly	1 wooden
3 chain	1 harmony	1 note	12 song	1 work
1 children	1 harsh	1 notes	1 songs	
1 clean			1 sorority	
1 clear			103 sound	1 yell
1 come				
1 conductor				

23. WOMAN

2 adult	1 delicate	2 grand	3 lovely	5 short
1 affinity	1 delightful	1 grandmother	1 loving	4 sister
1 aged	1 develop	2 great		3 skirt
2 angel	1 dignity		1 Mabel	3 skirts
1 appearance	1 dinner	9 hair	1 maid	2 slender
1 appreciating	1 domestic	4 handsome	1 majesty	1 small
1 artificial	28 dress	5 hat	-292 man	1 softness
	4 dresses	1 hats	2 mankind	1 spiritual
1 baby	1 dressmaker	1 helper	2 marriage	2 stout
1 Barnard	1 dust	3 helpmate	2 married	2 style
17 beautiful		1 her	2 mate	1 suffrage
7 beauty	1 Edna	3 home	1 modesty	2 sweet
9 being	1 endurance	1 honor	30 mother	2 sweetness
1 Bible	2 Eve	2 house	1 Mrs. S.	1 sweetheart
1 biped	1 eyes	1 housekeeper	1 myself	
3 body		1 housewife		1 talk
1 bonnet	9 fair	11 human	1 nature	7 tall
3 boy	3 fashion	2 humanity	1 necessity	1 teacher
1 bright	-134 female		3 nice	1 temporary
	10 feminine	1 inexplicable	1 noble	1 truth
1 capability	2 flesh	1 individual	1 nurse	
1 cat	1 figure	1 intellect		1 uneasy
1 character	2 fine	1 interesting	1 old	1 use
45 child	1 freedom			
2 children	3 friend	5 kind	1 palmist	2 virtue
1 clean		1 kindness	1 parascot	
1 clever	1 genteel		1 people	1 waist
6 clothes	5 gentle	2 labor	1 perfection	1 walks
1 clothing	1 gentleness	41 lady	17 person	1 weak
2 comfort	-59 girl	4 large	1 petticoats	2 weakness
1 companion	3 girls	1 leader	3 pleasure	15 wife
4 creature	1 goddess	1 liar	10 pretty	1 will
1 cross	4 good	1 living	1 purity	1 womanhood
	1 goodness	1 lovable		2 work
1 dear	1 gown	5 love	1 rib	
1 deceit	3 grace	1 loveliness	5 sex	5 you
	2 graceful			4 young

24. COLD

1 activity	1 darkness	2 head	1 overcoat	1 sleighing
2 agreeable	5 day	1 hearted		1 slow
4 air	1 death	37 heat	1 pain	1 sneezing
1 arctic	1 degree	-351 hot	1 Peary	45 snow
4 atmosphere	6 disagreeable	114 ice	2 penetrating	1 snuffles
1 autumn	8 discomfort	1 ice-cream	1 pleasant	1 stone
	3 dreary	1 irritating	1 pressure	1 storm
2 bad				3 stove
4 bitter	1 feel		1 quiet	
1 bracing	10 feeling	1 January		1 temperate
1 breezy	1 feet		1 raw	8 temperature
1 brisk	1 Finland	1 latitude	1 refrigerator	1 thermometer
1 bum	6 fire	1 lemonade	1 rhinitis	1 touch
	1 fold	2 light	1 room	
9 chill	7 freeze		1 running	10 uncomfortable
30 chilly	28 freezing	2 man	1 rough	4 unpleasant
2 clothes	2 frigid	1 medicine		
1 clothing	9 frost	1 misery	1 sensation	-166 warm
1 coal	4 frozen	1 mushroom	5 severe	6 warmth
5 coat	1 fuel		3 sharp	7 water
2 comfort	2 furs	1 nature	6 shiver	49 weather
1 comfortable		1 naughty	2 shivering	1 well
1 uncomfortable	1 gripe	1 near	1 shivers	1 white
5 cool	1 gloomy	1 never	1 shivery	5 wind
5 cough		1 night	1 shrivel	1 windy
2 cure	1 ham	1 numb	1 shudder	-120 winter
	1 hands	1 numbness	4 sick	1 wraps
2 damp	2 hard		6 sickness	
4 dark			1 skating	2 zero

25. SLOW

1 action	1 decrease	1 indecision	1 pace	1 subway
1 age	2 delay	1 insect	1 papa	27 sure
1 anger	1 deliberate	2 invalid	8 person	8 swift
2 animal	2 dilatory	1 irritating	2 Philadelphia	1 awing
1 ant	1 distance		1 poke	
1 anxiety	1 dizzy	1 laggard	2 poky	1 talk
1 association	1 donkey	1 lagging	1 Poughkeepsie	3 tardy
1 automobile	1 drag	1 lassitude	1 pupil	1 team
1 awful	1 dragging	2 late		1 tedious
	2 dreary	2 laziness	1 quality	1 terrapin
2 baby	1 dressing	28 lazy	56 quick	1 thoughtful
3 backward	1 drive	1 lecture	2 quickly	1 tide
1 backwards	1 driver	1 leisure	1 quickness	12 time
1 bad	1 drone	1 lingering		5 tired
1 bear	1 Dr. R.	6 long	1 rain	2 tiresome
1 beggar	7 dull		9 rapid	4 tortoise
1 behind		3 man	1 rhythmic	18 train
1 better	2 ease	1 march	1 river	1 trains
1 Bill	63 easy	1 market	1 Rose	1 trolley
3 boat	1 Erie	3 me	2 run	9 turtle
1 boring		1 medium		
2 boy	216 fast	1 mice	1 sharp	2 unpleasant
1 breakdown	1 feeble	1 mind	1 short	1 unsatisfactory
	1 fine	1 mode	1 sick	
1 camel	1 fire	1 moderate	1 sickness	1 vehicle
1 canal boat	1 fly	20 molasses	1 slack	
6 car	1 foot	1 monotonous	2 sloth	7 wagon
2 cars	1 funeral	1 moon	1 slowly	8 walk
1 careful		7 motion	7 sluggish	7 walking
1 carpenter	3 gait	1 motionless	10 smart	1 walks
1 cart	1 gin	1 move	1 smooth	1 water
1 catch	1 going	8 movement	62 snail	1 waves
2 caterpillar		5 moving	1 snails	2 weak
1 caution	2 hard	1 Mr. T.	1 snake	1 weather
1 child	3 haste	3 mule	1 softly	1 wheel
1 climb	2 hasty	3 music	2 speech	1 white
5 clock	1 heavy	3 myself	7 speed	1 work
3 coach	14 horse		1 speedless	1 working
1 conversation	1 hot	1 nasty	1 starting	1 world
1 cow	3 hurry	1 nature	2 step	3 worm
1 crawl			3 still	1 writing
1 creep	1 imp. tience	1 obstacle	3 stop	
2 creeping	1 inactive	2 old	1 stubborn	1 you
	1 inanition	2 ox		
1 dead	1 incessant	1 oxen	7 stupid	

26. WISH

1 accomplish	1 candy	1 dog	6 fulfilment	3 heaven
1 accomplishment	1 cannot	1 doll	1 fun	1 heavens
1 achieve	1 check	1 dollars		1 help
1 Aladdin	2 chicken	2 dream	2 gain	12 home
2 ambition	2 child	1 dress	14 get	41 hope
1 angel	3 Christmas	1 driving	4 gift	1 hoping
1 answer	1 clover		1 girl	2 hopeful
1 anxiety	1 clovers	1 eat	3 give	1 house
1 anxious	1 cold	1 entreaty	1 glad	
1 any	2 come	1 enjoyment	4 go	2 idea
7 anything	4 comfort	1 examination	1 gold	1 imagination
1 apology	9 command	1 expectation	19 good	1 impossible
1 ardent	1 conditions	5 express	7 grant	1 inclination
8 ask	2 cool	1 expression	15 granted	
1 asking	1 craving		4 gratification	2 journey
1 attain		11 fairy	6 gratified	1 joy
	2 demand	2 fancy	11 gratify	
1 baby	1 desirable	1 farm	1 greetings	1 know
2 beg	297 desire	5 favor	2 guess	
1 benefit	1 desires	1 feeling		2 letter
1 best	1 diamond	1 finish	18 happiness	8 like
1 better	1 disappoint	1 fish	3 happy	1 liked
19 bone	1 disappointed	1 fond	1 hard	1 lonesome
1 books	3 disappointment	1 foolishness	2 hat	10 long
1 boy	1 dish	5 for	1 hate	18 longing
1 boys	1 dislike	2 fortune	18 have	2 love
1 breakfast	1 did	1 fulfil	6 health	9 luck
1 brightness	5 do	2 fulfilled	1 hearty	

1 make	1 perhaps	1 repeat	9 star	1 unsatisfied
1 marry	1 person	8 request	2 stars	
2 million	1 pick	1 rest	1 strong	2 vacation
4 mind	1 picture	1 rich	4 success	
32 money	1 pie	3 riches	1 suggest	66 want
1 moon	1 plan	1 ring	2 summer	1 wants
1 morning	1 play		1 sweetheart	1 wanted
1 music	1 pleasant	1 sail	1 swim	9 wanting
1 myself	5 pleasure	1 satisfactory		1 waste
	2 plenty	2 satisfied	18 think	1 watch
1 news	3 position	1 satisfy	6 thinking	1 water
1 nice	1 poscoss	1 satisfying	47 thought	2 wealth
1 no	1 possession	2 say	1 toy	6 well
2 obey	2 present	1 secret	1 trip	3 will
1 object	2 promise	1 sincere	1 trouble	2 wisdom
1 obtain		1 sleep	6 true	1 wise
1 offer	1 quiet	1 some	1 try	14 wishbone
1 one	1 reality	15 something		2 wonder
1 opportunity	1 receive	1 sorrow	1 unattainable	2 would
1 opposition	1 remembrance	1 sorry	1 uncertain	1 wouldn't
1 orange	1 renown	1 speak	1 unfulfilled	
1 order		1 special	1 unlawful	1 yes
				1 you

27. RIVER

1 Amazon	1 Connecticut	65 lake	5 pond	7 smooth
1 Androscoggin	10 creek	1 lakes		1 spring
	8 current	5 land	1 rain	1 St. Lawrence
1 bank		7 large	1 Rappahannock	117 stream
2 banks	1 dangerous	1 launch	2 rapid	1 streama
1 barrow	35 deep	1 length	1 Rhine	1 streamlet
3 bathing	1 Delaware	1 life	1 rill	1 strong
1 bay	1 depth	1 liquid	2 rivulet	1 sunset
1 beautiful	1 drowned	8 long	1 rivulets	2 Susquehanna
1 beauty		1 meadow	1 row	3 swift
1 bend	4 East	8 Mississippi	1 rowing	4 swim
6 blue		1 Mississquoi	3 run	4 swimming
20 boat	1 fish	1 Missouri	3 runs	
3 boats	24 flow	1 Mohawk	6 running	1 Tay
1 boating	5 flows	1 motion	1 rushing	1 tide
1 body	17 flowing	10 mountain		1 tree
2 bridge	1 Freiberg	2 moving	1 Saco	1 tug
5 broad	1 front		4 sailing	1 turbulence
20 brook		17 ocean	1 salt	
1 bubbling	1 God	2 Ohio	14 sea	5 valley
	1 Grand	1 Ottanquechee	2 shallow	
1 Calumet	1 green	1 Owasco	1 Shannon	1 Ware
1 camping			2 shining	303 water
1 canal	33 Hudson	1 Pacific	4 ship	3 well
3 canoe		2 peace	1 ships	2 wet
1 canoeing	1 island	1 Piscataque	1 side	3 white
1 Chignagnette		1 plain	1 sky	5 wide
1 cliffs	1 Jordan	1 pleasure	2 slow	2 winding
1 commerce			1 small	1 winds

28. WHITE

1 almost	1 cerement	35 dark	1 glare	1 lovely
2 apron	1 chair	1 darkness	1 good	
	3 chalk	1 day	2 gray	2 man
1 baby	1 cheerful	1 daylight	6 green	1 marble
1 beach	1 cherries	2 dazzling		9 milk
1 beautiful	10 clean	1 delicate	1 hall	1 Mountain
1 beauty	2 cleanliness	2 dove	2 handkerchief	1 Mountains
1 bird	1 cleanness	34 dress	1 hands	3 muslin
208 black	2 clear	1 dresses	1 hard	
1 bleached	17 cloth		2 horse	1 napkin
9 blue	1 clothing	2 easy	4 house	1 nearly
1 boat	4 cloud	1 evening		2 nice
1 Bob	2 clouds		1 innocence	
1 body	1 coat	1 face		5 paint
1 bride	70 color	2 feathers	1 lady	2 pale
4 bright	1 colored	2 flag	1 lawn	17 paper
1 brightness	11 colorless	2 flower	1 lead	1 pencil
1 Broadway	3 cotton		1 lemon	2 person
2 brown	1 cream	2 garment	1 lie	1 pigeon
	2 curtain	1 ghost	51 light	2 pink
2 ext	1 curtains		3 linen	1 pleasing

1 powder
1 pretty
20 pure
19 purity

1 race
7 red
1 restful
1 retired
1 ribbon

1 rightness
2 roae
1 sand
1 Sarah
1 shade
6 sheet
1 shoes
1 shroud

1 silvery
1 simple
1 skirt
2 sky
1 snow
1 snowflake
1 snowy
1 soft
1 soul

1 space
1 spread
2 still
1 summer
1 sunlight
1 swan
4 tablecloth
1 tent

1 tile
1 trees
1 trousers
2 waist
6 wall
1 wash
2 wedding
7 yellow

29. BEAUTIFUL

1 admirable
1 admiring
1 aesthetic
1 all
1 ancient
2 appearance
6 art
1 artistic
1 attractive
1 attractive

1 baby
1 bird
1 birds
1 brilliant
1 building
2 butterfly

1 carpet
1 carving
7 charming
6 child
1 city
1 classic
1 clear
1 clouds
1 color
1 colors
3 comely
1 common
3 complexion
1 conceited
3 country
1 curtain
1 dainty
7 day
1 delicious
5 delightful
1 description
1 desire

1 divine
2 dress
1 earth
5 elegant
1 enjoyed
1 ethereal
2 Eunice
1 Evelyn
1 everything
4 exquisite
1 eye
2 eyes

3 face
5 fair
1 falls
2 fancy
1 fascinating
8 fine
13 flower
42 flowers
1 foliage
1 forest
1 Formosa
1 fragrant
2 friend

1 gift
24 girl
2 glorious
2 God
4 good
2 gorgeous
1 graceful
40 grand
2 grandeur
1 grass
1 grounds
1 hand

1 handsome
1 happy
1 hard
1 hateful
2 heaven
1 heavens
1 hideous
2 hills
27 homely
1 horrible

1 joy
1 kind
5 lady
1 lake
7 landscape
1 lightness
1 long
1 look
1 looks
1 looking
2 lovable
64 lovely
1 luxurious

10 magnificent
2 maiden
2 man
1 mansion
1 money
1 morning
2 mountain
6 mountains
4 music
1 myself
16 nature
1 Niagara Falls
1 nice

1 nicely
1 night
1 noble
1 object
3 ocean
2 Palisades
1 pansies
1 park
3 peacock
1 perception
3 perfect
1 perfection
2 person
19 picture
4 pictures
1 place
2 plain
14 pleasant
16 pleasing
2 pleasure
113 pretty

1 queen
1 rainbow
1 religion
1 resplendent
1 ribbon
1 rich
1 robin
6 rose
2 roses
1 sad
1 satisfaction
1 scarce
1 scene
23 scenery
1 school

1 sculpture
1 sensitive
1 shapely
1 sight
16 sky
1 soft
1 sometimes
1 soothing
1 sorrowful
8 splendid
1 statue
1 straw
2 summer
1 sun
8 sunset
1 sunshine
1 superb
1 supreme
4 sweet
1 symphony
2 things
4 tree
10 trees

2 ugliness
60 ugly
1 vanity
1 verdure
1 violets
4 weather
1 wife
29 woman
1 women
1 wonderful
2 world
1 you

30. WINDOW

12 air
1 airing
1 airy
2 aperture
1 awning

1 bars
4 blind
1 breeze
3 bright
2 broken

1 cage
3 casing
1 children
1 church
6 clean
1 cleaner
7 clear
1 colored
1 cool
13 curtain
4 curtains

1 danger
2 dirty
57 door
1 doors
1 doorway
1 draught

1 eyes

1 few
5 frame

1 garden
316 glass
1 glasses

4 hole
1 home
22 house
1 joyful

2 landscape
11 large

2 lattice
1 ledge
150 light
15 look
5 looking
1 low

1 Newcastle

1 object
19 open
1 opened
16 opening
1 outdoors
5 outlook

2 pane
6 panes
1 picture
1 porch

1 rain
1 rock
3 room

20 sash
2 scene
3 scenery
2 school
1 screen
1 screens
1 seat

9 see
8 shade
2 shades
1 shed
1 shining
7 sight
1 slightly
13 sill
1 sky
3 skylight
1 small
1 square
2 stained
1 stop
1 street
1 structure
3 sun

2 sunshine

1 thing
1 translucent
1 transom
24 transparent
2 trees

2 useful
1 vast
5 ventilation
2 ventilator
15 view
1 viewing
1 visible
1 vision

4 wall
1 wash
2 wide
2 winter
1 wood

31. ROUGH

4 bad	2 earth	1 knife	5 ragged	3 street
1 bag	2 easy	1 lake	1 railway	6 surface
1 ball	2 even	1 land	1 rasp	
1 basket		3 level	5 ready	4 table
1 bear	1 face	1 luck	1 refined	1 tempestuous
1 blisters	1 fast	1 lump	1 rider	1 tongue
1 blow	7 file		1 riders	2 touch
10 board	2 fine		1 river	2 tough
1 boards	6 floor	8 man	21 road	1 towel
4 bolsterous	2 football	1 manner	5 roads	4 tramp
2 bold	1 forest	1 manners	10 rock	1 trouble
4 boy		1 material	10 rocks	1 tumble
4 boys	1 gambler	1 me	12 rocky	1 turbulent
1 bristle	1 genteel	1 mean	1 rowdy	
2 brush	8 gentle	3 mild	1 ruddy	4 ugly
3 brutal	1 girl	6 mountain	7 rude	4 uncomfortable
1 brutality	1 granite	1 mountains	1 rudeness	4 uncouth
1 bumpy	1 granular		1 rug	1 uneasy
	1 grater	1 nice	22 rugged	38 uneven
2 calm	1 grating	1 noisy	1 ruggedness	1 unfairness
1 careless	1 gravel		1 Russian	1 unfinished
2 carpet	8 ground	1 obstetricians	1 rut	7 unpleasant
1 chapel		27 ocean		1 unsatisfactory
4 cloth	1 hatry	1 orange	5 sand	1 untaught
29 coarse	1 hall		13 sandpaper	
1 coarseness	2 hand	1 paper	1 savage	1 voices
1 cobblestones	38 hard	1 pavement	15 sea	2 voyage
1 cold	1 hardness	1 peasant	1 sedate	5 vulgar
2 country	10 harsh	1 pebbles	1 scratch	
2 crooked	1 harshness	2 person	1 shock	2 walk
1 cross	1 haste	1 picture	1 silver	1 wall
1 cruel	2 hill	1 pineapple	1 slow	1 washing
	2 hills	2 plane	346 smooth	21 water
1 desert	5 hilly	1 plank	3 smoothness	5 waves
1 difficult	1 horrid	1 play	4 soft	1 weary
1 dirt	1 house	1 poor	1 sponge	4 weather
3 disagreeable		1 porcupine	1 stern	1 west
1 discomfort	3 ice	1 push	1 sticky	2 wild
1 discouraging	1 impertinent		12 stone	2 wind
1 dog	1 injurious	1 quality	8 stones	1 winds
1 dress	2 iron	1 quiet	7 stony	7 wood
3 dry	2 irregular	1 quite	5 storm	1 woodsman
1 dull		1 radiator	1 stormy	1 work
	1 jagged		1 straight	1 world
				1 wrong

32. CITIZEN

14 alien	1 commander	1 fine	1 inhabit	2 men
5 America	8 community	2 five	23 inhabitant	1 merry
35 American	1 comrade	1 fool	1 invader	1 moral
3 Americana	1 conspirators	1 foreign	1 Italian	1 Mr. A.
1 army	1 constitution	19 foreigner		1 Mr. C.
1 arrived	1 cosmopolitan	1 free	2 justice	1 Mr. S.
	1 countrified	2 freeman		1 municipal
4 belong	17 country	1 friend	1 K.	1 myself
1 belonging	7 countryman	1 friendship	1 king	
1 beloved	1 criticise			1 name
1 beneficial		1 gardener	1 large	1 nationality
1 bird	1 democrat	8 gentleman	11 law	25 native
3 born	2 duties	3 German	1 laws	1 natural
1 Brooklyn	3 duty	26 good	3 lawyer	1 naturalization
1 brother	1 dweller	6 government	1 leader	5 naturalized
1 business	1 dwelling	1 green	1 leading	1 navy
			1 legislature	1 near
1 C.	1 ear	1 helper	1 Lincoln	3 neighbor
1 candidate	1 election	3 home	1 little	1 newspaper
1 capital	1 eligible	2 honest	1 live	4 New York
1 cat	2 emigrant	1 honor	1 lives	1 noble
1 cistern	1 emigration	2 honorable	3 loyal	2 nobleman
1 citizenship		3 human		1 nonsense
27 city	1 F.		7 male	
4 civics	1 faithful	1 I	278 man	1 obedient
2 civilian	1 farm	1 immigrant	1 manhood	1 obey
4 civilized	3 farmer	1 independence	6 mayor	1 occupant
1 clothes	3 fellow	1 Indian	1 me	2 office
1 club	2 fellowship	4 individual	5 member	1 officer

1 old	4 politician	1 righteousness	1 suburban	1 unit
1 orderly	1 politicians	2 Roman	3 suffrage	10 United States
1 outlaw	8 politics	2 Roosevelt	2 suffragette	2 useful
	1 poor	1 ruler		
2 paper	4 president		3 Taft	2 village
2 papers	1 proud	1 season	1 Tammany	13 vote
1 patrician		1 ship	1 taxes	4 voting
2 patriot	1 relative	5 soldier	1 Teddy	35 voter
2 patriotic	3 republic	10 state	1 thoughtful	
1 peasant	1 republican	5 statesman	1 tough	1 Washington
1 people	2 residence	1 stationed	5 town	2 woman
1 person	20 resident	1 straight	5 townsman	2 work
1 plebeian	1 respectable	5 subject		
2 policeman	1 revolution		2 undesirable	1 years

33. FOOT

2 anatomy	1 finger	1 labor	1 pedant	1 standard
2 animal	1 firm	1 lame	1 pedestal	6 step
11 ankle	1 flat	14 large	1 pedestrian	1 stepping
2 appendage	6 flesh	54 leg	5 person	2 stocking
11 arm	1 football	1 legs	1 plaster	1 stone
	3 foundation	2 length		1 strength
1 baby's		58 limb	2 quadruped	1 strong
1 base	1 gear	2 long		1 stumps
1 bicycle	1 girls		1 rheumatism	1 support
2 big	1 going	5 man	1 right	1 swiftness
3 black	1 good	3 measure	1 rubber	
34 body	2 ground	10 member	4 rule	1 three
4 bone		1 mine	1 ruler	5 tired
5 bones	155 hand	1 Miss F.	2 run	30 toe
6 boot	5 hands	2 movement		41 toes
1 bottom	7 head	1 music	1 shape	2 travel
1 broken	3 heel		146 shoe	1 trod
1 brown	1 help	1 nail	17 shoes	1 twelve
	1 helper	1 naked	4 short	1 two
1 careful	1 horse	2 necessity	1 size	
3 comfort	1 house	1 needful	1 skin	5 useful
3 corn	1 human		2 slipper	
2 corns	1 humility	1 organ	22 small	1 velocity
	1 hurt		1 sole	
1 dainty		1 pain	8 sore	100 walk
1 difficult	3 inch	1 painful	1 speed	38 walking
1 distance	2 inches	2 part	1 stability	1 warm
		1 pavement	6 stand	
1 expansive	4 kick	3 pedal	1 standing	1 yard
9 extremity	2 knee			

34. SPIDER

1 abhorrence	1 crawls	4 flies	3 nasty	1 stung
1 afraid	11 crawling	136 fly	1 nest	1 study
38 animal	1 crawly	1 fright	2 net	
1 annoyance	2 creature	1 fry	1 nuisance	3 tarantula
3 ant	6 creep	1 frying		1 thing
2 arachnida	1 creeps		1 objectionable	2 thread
1 arachnoid	7 creeping	1 grass	1 obnoxious	1 tortoise
1 awful	1 creepiness		1 octopus	1 treachery
	5 creepy	1 harlequin		1 tree
3 bee	2 cricket	1 harmful	1 pain	
2 bees	1 cringe	1 horrible	1 pan	6 ugly
4 beetle	1 cross	4 horrid	1 pest	1 undesirable
1 big	1 crow	3 horror	10 poison	1 unpleasant
2 bird	1 cunning		1 poisonous	
20 bite		1 industry	1 pretty	2 venomous
8 black	1 daddy-long-legs	256 insect		1 vermin
1 breakfast	1 danger	1 jumping	1 rats	
56 bug	4 dangerous		2 Robert Bruce	1 walk
2 bugs	1 dirty	5 large	1 roach	1 wall
3 butterfly	3 disagreeable	3 leg	1 room	6 wasp
	1 displeasure	27 legs	1 shivers	1 watching
1 camp	1 dread	1 loathsome	1 shudder	2 weaves
2 caterpillar		1 long	1 sinister	1 weaving
1 centipede			2 small	158 web
1 chills	1 evil	1 Miss Muffet	1 snake	3 webs
1 climb		1 mosquito	1 snakes	1 wiggly
12 cobweb	3 fear	1 moth	1 sparrow	4 worm
2 cobwebs	1 fish	1 movements	7 sting	1 young
1 country			1 stings	
14 crawl				

35. NEEDLE

3 article	2 dressmaker	4 knitting	1 pincushion	1 stitching
1 blood	1 embroidery	1 labor	40 point	1 surgeon
2 book	17 eye	1 long	9 pointed	
1 broken			10 prick	1 tailor
1 button	3 fine	1 magnetic	1 pricks	2 thick
1 buttons		1 material	2 pricking	15 thimble
	1 handy	1 mending	134 sew	2 thin
1 camel	1 help	3 metal	1 sews	100 thread
4 cloth	1 hole		107 sewing	5 tool
2 clothes	1 home	1 nail	152 sharp	1 use
2 coat	1 housewife	1 ornament	4 sharpness	1 using
7 cotton	2 hurt		1 shiny	12 useful
1 crocheting	2 hypodermic	1 patching	1 slippers	
1 cut	5 implement	147 pin	2 small	1 weapon
4 darning	2 industry	11 pins	53 steel	1 wire
1 diligence	26 instrument		2 sting	1 woman
				6 work

36. RED

1 aggravating	1 cheeks	1 fright	1 jacket	2 rug
1 anarchist	1 cheer	2 flower		
2 anger	1 cherries	1 flowers	1 lavender	3 scarlet
13 apple	1 closet	1 flushing	1 light	1 shoe
3 apples	8 cloth		1 lips	2 sky
	1 clouds	1 garment		1 smooth
1 ball	2 coat	3 garnet	1 maroon	1 soldier
1 banner	254 color	1 gaudy	1 Mars	1 spots
2 barn	1 colors	2 glaring	1 mixture	1 story
2 beauty	1 colored	1 glass	1 moon	5 sun
1 becoming	1 coloring	1 globe		3 sunset
61 black	1 comfortable	1 glow	1 object	1 sweater
71 blood	1 Cornell	1 grass	1 objectionable	
1 bloody	1 cow	30 green	1 offensive	1 tablecloth
1 blossom	2 crimson		1 orange	4 thread
2 blue	2 curtain	6 hair		1 tie
5 book		1 handsome	5 paint	1 tomatoes
1 bravery	14 danger	1 hat	4 paper	2 turkey
3 brick	6 dark	2 head	1 passion	
2 bricks	1 dashy	1 healthy	1 pencil	1 vivid
40 bright	1 dislike	4 heat	1 pink	
2 brightness	18 dress	1 Hereford	1 plush	1 war
3 brilliant		1 holly	1 poinsettia	6 warm
1 brook	1 eat	1 hood	2 pretty	3 warmth
7 brown	1 Ed	1 horse	6 purple	1 whiskey
1 building		5 hot		97 white
2 bull	2 fiery	2 house	2 ribbon	1 wool
	31 fire		1 riding	1 world
1 cap	16 flag	2 Indian	2 robin	
1 cape	3 flannel	4 ink	15 rose	1 yarn
1 carpet	1 flashy	1 iron	2 rosy	15 yellow
1 ceiling				

37. SLEEP

20 awake	2 dead	4 eat	1 habit	1 midnight
1 awaking	7 death	1 enjoyable	1 happiness	1 myself
3 awaken	5 deep	1 enjoyment	3 health	
1 awakening	1 desire	1 enough	1 heavy	1 natural
	1 desperate	1 experiment	1 home	4 necessary
2 baby	1 dope	10 eyes		1 need
1 beautiful	2 dormitory		2 insomnia	1 needful
25 bed	1 dose	1 fast		1 nice
1 bedstead	4 dose	2 fatigue	1 lady	40 night
	28 dream	1 fine	1 leisure	
2 calm	10 dreams	2 forgetfulness	1 lain	1 peace
1 chance	6 drowsy		3 lie	1 peaceful
2 child	3 drowsiness	1 gentle	1 lying	2 peacefulness
1 children	1 dullness	1 girl	1 luxurious	1 perfect
1 coma		1 go	1 luxury	5 pillow
30 comfort	3 ease	3 good	1 mesmerism	3 pleasant
	4 easy			1 plenty

1 poorly	2 refreshment	1 senses	1 song	60 wake
1 potassium bro-	1 relax	1 Shakespeare	2 soothing	4 wakefulness
1 mide	31 repose	1 sheet	16 sound	1 awakened
2 profound	20 rest	1 shut	3 soundly	1 wakening
8 quiet	14 resting	1 silence	2 still	4 waking
2 quietness	9 restful	1 sleeplessness	3 sweet	2 walk
1 quietude	4 restless	1 sleepy	1 thinking	1 wanting
	1 restore	20 slumber	26 tired	1 watchful
	2 restorer	2 slumbering	1 tiresome	3 weariness
1 rage	1 retiring	4 snore		1 weary
2 recline	1 rise	1 soft	12 unconscious	1 well
1 reclining	1 rising	1 solace	7 unconsciousness	1 woman
7 refreshing				

38. ANGER

1 abuse	5 disturbed	1 horror	1 nonsense	1 slow
1 aggravated	4 dog	3 hot	1 not	2 smooth
2 aggravation	1 downhearted	1 hot-headed	1 noticeable	1 sober
1 agony	1 duel	1 house		1 soft
2 amiability		1 humor	1 obey	1 soldier
1 amiable	3 emotion	1 hunger	1 out	1 sometimes
6 angry	2 enemy	1 hysteria	1 outrage	1 soothing
2 anguish	1 energy			10 sorrow
1 annoyance	1 enmity	1 ill	1 pain	1 spite
3 annoyed	1 excitability	4 impatience	51 passion	1 spiteful
1 appearance	3 excited	3 impatient	1 passionate	1 storm
1 aroused	4 excitement	1 Indian	3 patience	1 strike
1 awful	1 exclamation	1 indignant	6 peace	1 strong
		2 indignation	1 peaceful	1 suffering
		1 insanity	1 peevish	1 sulky
13 bad	1 face	1 insult	2 person	1 swear
2 bitter	1 father	1 intense	1 placid	1 sweetness
3 bitterness	9 fear	1 intensity	5 pleasant	1 sword
1 blow	4 feeling	1 intoxication	4 pleasure	
1 blows	1 ferocity	2 ire	2 provocation	1 talking
1 blush	1 fierce	1 irritable	1 provoke	2 teacher
3 boy	1 fiery		1 provoked	1 tears
1 breathing	8 fight	1 jealousy	2 provoking	10 temper
	1 fighting	1 Jimmy		1 temperament
7 calm	1 fist	4 joy	3 quarrel	1 terrible
1 calmness	1 flush	1 joyful	2 quarrelling	1 terror
2 cat	1 foolish	1 judgment	1 quarrelsome	3 thought
1 catching	3 foolishness		4 quick	1 torment
2 cause	1 forgive	2 kind	1 quickness	6 trouble
1 character	3 forgiveness	2 kindness	6 quiet	1 turbulent
1 cheer	1 frenzy		1 quietness	1 turmoil
1 child	1 fret	1 laughter	1 quite	
1 children	1 fright	1 light		1 ugliness
1 choler	1 frown	2 lion	16 rage	4 ugly
1 cold	1 frowning	1 little	1 rarely	1 unbecoming
3 command	1 fun	3 loud	1 rashly	1 uncomfortable
1 compose	2 furious	5 love	1 rashness	1 unhealthy
5 control	4 fury	1 low	1 raving	4 unpleasant
1 cool			1 reason	
1 cranky	2 gentle		3 red	1 very
1 crazy	3 gentleness	121 mad	1 remorse	3 vexation
44 cross	1 giant	1 maddest	2 resentment	13 vexed
2 crossness	1 girl	19 madness	1 resistive	1 vicious
1 covetous	4 glad	6 man	1 rest	1 violence
1 cruel	2 gladness	1 mean	1 restless	2 violent
1 cry	2 good	4 meekness	8 revenge	1 voice
	1 great	3 mild	2 riled	
1 danger	3 grief	4 mind	3 rough	1 war
1 deliberation	1 grieve	2 mirth	1 roughness	5 wicked
1 despise	2 grouchy	2 myself	1 rude	3 wickedness
1 devil				1 wish
4 disagreeable	4 happiness	1 name	1 sad	
1 disappointed	2 happy	1 nature	2 scold	4 woman
2 disappointment	3 harsh	1 nerves	2 scolding	1 words
3 discomfort	3 haste	1 nervous	1 scowl	52 wrath
1 dishonor	3 hasty	1 never	1 sedative	1 wrathful
1 dislikes	9 hate	1 nice	1 selfishness	2 wroth
1 disobedience	1 hateful	2 noise	1 sharp	4 wrong
1 disobedient	26 hatred	1 noisy	1 shorn	
2 displeased	1 headache	1 none	1 sick	1 yelling
2 displeasure	1 horrid		1 sin	
3 disturbance				

39. CARPET

1 appearance	1 curtains	8 green	1 pattern	10 sweeper
1 article	1 dark	1 hall	1 pennant	1 table
1 beat	6 design	3 heavy	1 pleasant	8 tack
2 beating	1 designer	4 home	2 plush	3 tacks
1 beater	2 dirt	4 house	4 pretty	2 tapestry
2 beautiful	1 down		2 protection	2 textile
1 beautifying	1 drag	2 ingrain	1 quick	2 thread
2 beauty	1 dullness			2 tread
1 bedroom	4 dust	1 lay	7 rag	2 use
2 blue	1 duster	1 loom	3 rags	1 useful
2 bright		1 lot	1 ragged	
1 broom	3 ease	3 luxury	8 red	9 velvet
2 brown	1 electric		1 reddish	
1 brush	1 expense	6 mat	1 refinement	
1 brushes		3 material	1 rich	15 walk
14 Brussels	2 fancy	10 matting	17 room	6 walking
	3 figure	1 mattress	2 rough	1 wall
1 chair	1 flat	1 microbes	183 rug	1 Wanamaker
1 chairs	256 floor	1 moss	14 rugs	2 warm
3 clean	2 flooring			5 warmth
2 cleaning	2 foot	1 nail	1 shoes	1 weaver
1 cleaner	1 fur	1 neatness	1 small	1 weaving
20 cloth	1 furnishing	2 nice	8 smooth	1 wear
6 color	4 furniture	1 none	78 soft	1 white
1 colors			4 softness	1 wide
15 comfort	1 germs	7 oilcloth	2 stairs	1 wood
3 comfortable	2 good	1 oriental	1 stove	10 wool
2 cotton	4 goods	2 ornament	1 straw	7 woolen
27 cover	1 grain		7 sweep	1 worsted
26 covering	1 gray	3 parlor	3 sweeping	2 woven

40. GIRL

1 ankles	2 cute	3 hair	7 maid	6 sister
1 Annie		1 hand	13 maiden	2 sixteen
1 associate	2 dainty	5 handsome	1 maidenhood	1 skirts
	1 damsel	1 happiness	1 male	1 slender
1 baby	1 dance	1 harmlessness	7 man	1 slight
1 Beatrice	1 dancing	1 has	1 men	1 slim
8 beautiful	2 daughter	3 hat	1 meek	8 small
6 beauty	1 delight	1 head	1 mischievous	1 smart
9 being	1 diabolio	1 here	4 miss	1 smartness
1 belt	1 domestic	1 hood	1 Miss S.	1 student
1 big	1 Doris	1 hoop	1 modesty	1 studious
1 biped	1 Dorothy	7 human	2 mother	3 study
1 blonde	1 dream	1 humanity	2 myself	1 stylish
1 blooming	8 dress			1 summer
1 book	4 dresses	1 immature	2 neat	4 sweet
26 boy		2 infant	2 necessity	1 sweetness
3 boys	1 Effie	3 innocence	11 nice	2 sweetheart
2 braids	1 Ethel	1 innocent	2 niece	
1 bright	1 eyes	1 intelligent	1 noise	1 talks
		1 Irene		4 tall
1 changeable	1 fair		1 Pelar	1 thoughtless
1 cheerful	2 fellow	1 jealousy	18 person	
42 child	2 female	2 jolly	1 petticoats	1 ugly
2 children	3 feminine	2 joy	2 play	1 useful
2 childhood	3 flesh		4 pleasure	
1 childish	1 flirtation	1 kid	20 pretty	1 vanity
1 choice	1 Frances		1 pupil	2 virgin
1 class	7 friend	20 lady		
1 classmate	1 futurity	1 large	1 quick	1 walk
1 clever		1 lassie	1 rarely	1 water
4 clothes	1 garden	1 learning	1 running	2 weak
1 clothing	1 gay	3 little		1 white
1 Coleen	1 gentility	1 lively	1 saucy	1 wife
1 college	1 gentle	1 Lizzie	19 school	61 woman
2 companion	1 Gertrude	3 love	3 servant	
1 cook	6 good	1 loving	4 sex	31 young
1 cunning	1 grace	4 lovely	1 shirk	1 youngster
2 curls			4 silly	24 youth

41. HIGH

9 above	2 dizzy	24 house	16 mountains	1 staff
5 air		1 houses	1 myself	1 stand
1 Alps	11 elevated	1 ideal	1 notion	13 steep
14 altitude	2 elevation	1 ideas		12 steeply
1 ascend	1 erect	1 immense	4 peak	1 stick
	2 exalted		1 pine	1 stone
1 bank	1 extended	2 jump	1 pinnacle	1 summit
1 beam			1 play	2 swing
1 beanstalk	3 fall	1 kite	8 pole	57 tall
3 big	2 falling	2 ladder	1 power	1 temperature
1 bridge	1 far	5 large	3 precipice	1 temple
24 building	1 fast	7 length		5 top
2 buildings	2 fear	1 lighthouse	2 reach	12 tower
	1 feet	20 lofty	1 rich	19 tree
1 Cathedral	3 fence	7 long	1 rocky	4 trees
4 ceiling	1 first	328 low	3 roof	
2 chair			1 room	26 up
2 church	2 giant	1 magnificent	1 see	1 upward
1 cliff	1 great	1 man	1 shallow	1 valley
1 climb	1 hat	2 mast	3 short	1 vision
1 climbing	1 heaven	1 measure	1 skies	5 wall
7 clouds	3 heavens	3 medium	17 sky	1 waves
	1 heavenward	1 Metropolitan	2 skyscraper	2 wind
5 deep	14 height	1 mind	1 soft	1 woman
4 depth	20 bill	2 monument	1 spire	
1 dimension	4 hills	1 mount		
11 distance	1 hot	157 mountain		
3 distant				

42. WORKING

1 accomplish	2 earning	2 horse	1 making	1 prosperous
1 accomplishment	2 ease	1 hour	50 man	
3 active	1 easiness	1 house	6 men	1 quick
1 activity	4 easy		1 model	1 railroad
1 always	2 eating	44 idle	4 money	1 reading
1 ambition	1 effort	10 idleness	1 morning	1 recreation
5 ambitious	10 employed	2 idling	3 motion	17 rest
1 anxious	1 employers	1 inconvenience	2 movement	24 resting
1 apron	4 employment	1 indolent	5 moving	1 result
1 attendant	2 energetic	13 industrious	1 mowing	1 rowing
	3 energy	8 industry	2 myself	3 running
1 bent	2 engaged	1 intelligent		
1 book	1 English	1 interest	4 necessary	1 salary
2 boy	1 essay	2 Italian	1 necessity	1 satisfaction
2 broom	15 exercise	1 job	1 neighbor	1 saving
6 business	1 exercising		1 never	6 school
51 busy	3 exertion	1 keeping	1 night	3 scrubbing
			1 noble	2 servant
1 carpenter	3 factory	147 labor	1 nothing	1 setting
3 class	2 fair	20 laboring	1 nursing	7 sewing
1 comfort	1 faithfully	1 labors		2 shirking
1 complication	1 farm	5 laborer	1 obstetrics	7 shop
2 content	1 fast	1 lack	13 occupation	1 shorthand
2 continually	3 father	1 ladies	1 occupied	1 sickness
1 continuous	7 fatigue	1 late	1 occupy	1 singing
1 cooking	2 fatigued	2 laziness	2 order	3 sitting
	1 field	18 lazy		4 slave
6 day	1 flowers	1 leisure	1 paid	1 slavery
1 difficult	1 foundry	1 little	1 patients	1 slaving
1 digging	1 function	1 live	5 people	2 sleep
1 diligence		2 livelihood	2 person	8 sleeping
1 discomfort	2 girl	5 living	1 perspiration	1 slow
2 do	4 good	1 loaf	22 playing	1 smart
10 doing		5 loafing	1 pleasant	1 starving
1 done	2 hammer	1 loafer	4 pleasure	2 steady
1 drawing	1 happiness	1 lounging	1 plow	1 stenographer
1 driving	105 hard		1 plowing	2 strenuous
1 drudge	2 health	2 machine	1 policy	1 struggle
1 dusting	1 healthy	1 machinery	1 position	5 study
1 duties	1 hoeing	1 machinist	1 possession	5 studying
2 duty				

1 sweep
3 sweeping
1 swift

1 table
2 task
1 thinking

1 thought
1 time
28 tired
3 tiresome
1 tiring
1 to-day
7 toil

9 toiling
2 tools
1 treadmill
1 trouble
2 trying
1 typewriter

2 unemployed
2 useful

4 wages
2 walking
1 washerwoman
5 washing

1 weariness
2 willing
2 woman
1 work
1 workman
1 world
2 writing

43. SOUR

1 septic
23 acid
1 acrid
1 anger
1 angry
27 apple
10 apples
1 astringent

1 delight
18 disagreeable
1 dislike
3 disposition
4 distasteful
1 drink

1 juice

2 kraut

78 lemon
17 lemons
1 lime

15 pickle
26 pickles
1 pleasant
1 plum
1 plums
3 pucker

1 stomach
2 sugar
349 sweet

17 tart
55 taste
2 tasting
2 tasteless
1 teeth
1 turned
1 twinge

4 bad
1 beer
70 bitter
1 bitterness

1 face
1 flavor
3 fruit

1 gall
4 good
1 goodness
3 grape
26 grapes
2 grapefruit
1 green

1 man
31 milk

3 nasty
1 naturally
3 nice
1 no
1 nourishing

1 odor
2 orange

3 quince

1 rancid
1 repulsive
5 rhubarb
1 rough

2 salt
1 salty
2 sauerkraut
1 sear
2 sharp
1 soft
1 song
1 spoiled

4 ugly
1 unhappy
3 unpalatable
16 unpleasant
1 unpleasantness
1 unsweetened

1 dangerous
1 death

1 hate
1 hurts

1 painful
1 persimmon

21 vinegar
1 wholesome
1 wine

44. EARTH

1 agriculture
3 air
1 ashes

4 ball
3 beautiful
2 big
7 black
1 body
2 broken
17 brown
1 building

115 dirt
4 dirty
1 dogs
4 dry
9 dust

3 farm
1 farming
1 fence
1 fertile
1 fertilized
4 field
1 fields
1 flag
3 floor
1 flower
8 flowers
1 foot
1 foundation
1 fresh
1 fruitful
1 Fuller's

1 growth

2 habitation
4 hard
31 heaven
1 heavens
2 heavy
1 hell
1 hemisphere
3 home
1 house
1 huge

1 inhabitable

2 mould
1 mouldy
4 mountain
2 mountains
16 mud

4 nature

1 object
1 ocean
1 one
1 orange

5 sand
31 sky
1 smelly
3 smooth
2 sod
5 soft
37 soil
1 solid
2 solidity
1 space
4 sphere
1 star
2 stone
2 stones
1 street
1 substance
4 sun
3 surface

1 cemetery
71 clay
7 climate
1 cloud
1 coffin
2 cold
1 color
2 Columbus
1 continent
2 corn
2 country
1 cover
1 creation
1 crunching
1 crushed
5 crust

8 garden
1 geranium
16 globe
2 grain
1 grand
11 grass
3 grave
2 gravel
1 gravity
2 great
3 green
1 greenhouse
100 ground

28 land
7 large
1 level
3 live
2 living
3 loam
1 lot
2 low

1 paradise
1 place
17 planet
2 plant
5 plants
1 planting
1 pleasure
1 potential
1 productive
1 put

1 travel
4 tree
5 trees

1 unfertile
8 universe

1 vastness
1 vegetable

5 damp
16 dark
1 delve
2 depth
1 dig
2 digging

1 man
2 map
3 Mars
1 mass
1 material
1 matter
1 metal
1 mine
1 mineral
3 moist
11 moon
5 mother

1 rain
1 rampart
1 rest
1 revolution
4 rich
1 river
1 road
2 rock
2 rocks
61 round
1 roundness

3 walk
10 water
1 wide
1 wood
46 world
5 worm
2 worms

45. TROUBLE

2 accident	1 disagreeable	3 health	20 pain	1 table
4 affliction	2 disagreement	1 heart	2 patience	1 task
3 aggravation	1 disappoint	1 heaviness	2 patient	9 tears
6 anger	3 disaster	1 hemorrhage	1 patients	1 teasing
6 angry	7 discomfort	2 home	15 peace	1 temper
1 anguish	2 discontent	1 horror	3 peaceful	1 temptation
1 annoy	3 disease	1 horse	3 people	2 thought
2 annoyed	2 dislike	1 hurried	1 perplexed	1 thoughts
5 annoyance	1 disobedience	1 husband	1 perplexity	1 torment
15 anxiety	1 displeased		3 person	1 travel
2 avoid	1 displeasing	1 idea	1 pity	1 trial
	2 displeasure	2 illness	16 pleasure	3 trials
	1 dissatisfactory	1 imaginary	1 plenty	5 troublesome
11 bad	2 distress	2 inconvenience	2 poor	
1 begins	2 disturbed	9 joy	2 poverty	1 ugly
1 black	1 doctor		1 psychologist	1 unavoidable
1 borrowed	1 dogs			1 uncertainty
1 borrows		1 kindness	3 quarrel	2 uncomfortable
4 bother	4 ease	1 kinds	3 quarrelling	6 uneasiness
2 bothered	1 easiness		3 quiet	6 uneasy
1 bothersome	1 easy	1 labor	1 quietness	2 unfortunate
1 brains	1 ended	1 laugh		13 unhappiness
1 brewing	1 enemies	1 lawyer	1 release	8 unhappy
1 broke	1 enemy	1 lessons	1 relief	1 unlucky
1 burden	1 error	2 life	1 remorse	2 unnecessary
1 burdens	1 everywhere	1 little	1 rest	5 unpleasant
1 business	1 exams	1 lonesome	2 reverses	3 unpleasantness
1 busy	1 excited	1 loss	1 Romeo	1 unrest
	2 excitement	5 lots	1 ruffled	1 unsafe
1 calm		2 mad	6 sad	2 unsatisfactory
1 calmness	3 family	1 madness	13 sadness	1 unsettled
27 care	1 father	5 man	1 school	2 upset
3 cares	3 fear	1 many	1 scrape	1 want
1 careless	1 feeling	2 marriage	1 sea	2 war
4 children	1 few	2 me	1 seldom	1 weak
1 college	5 fight	10 mind	1 serenity	3 weary
6 comfort	2 fighting	1 minded	1 shadow	2 weeping
1 comforts	1 fret	3 mischief	1 ship	1 welfare
1 comfortable	1 friends	1 miserable	1 shooting	1 woe
2 coming	1 fun	14 misery	47 sickness	5 woman
1 consequences	1 funeral	6 misfortune	1 simple	1 women
2 contented	3 fuse	1 misunderstanding	1 sin	8 work
1 contentment	2 girl	4 money	1 sleep	1 worked
1 court	2 gossip	1 monotony	1 sometimes	1 working
1 cry	2 great	1 mother	20 sorrow	3 worried
1 crying	26 grief	1 Mrs. Wiggs	1 sorrows	2 worries
6 danger		5 much	4 sorrowful	65 worry
1 darkness	1 handkerchief		1 sport	1 worrying
1 day	19 happiness	1 nervousness	1 squabble	5 worriment
16 death	8 happy	3 no	1 study	2 wrinkles
2 deep	5 hard	2 noise	1 suffer	2 wrong
2 despair	6 hardship	4 none	1 suffering	
1 difficult	1 harm	1 nuisance	1 sweetener	1 yesterday
1 difficulties			2 sympathy	1 youth
1 difficulty				

46. SOLDIER

1 academy	1 braveness	1 colonel	1 drums	1 fortune
1 armies	8 bravery	6 command	4 duty	
137 army	1 Brazilian	1 commanding		4 general
3 arms	1 brother	3 commander	1 enemy	1 Germany
1 Arnold	2 buttons	1 costume	1 England	1 glory
2 artillery		4 country	1 English	3 good
	4 cadet	5 courage	3 erect	1 Grant
1 baseball	2 camp			8 guard
8 battle	1 cannon	1 danger	1 fellow	1 guardian
1 bayonet	1 cap	2 defender	17 fight	1 guardsman
1 blood	8 captain	1 defense	1 fights	27 gun
1 blue	3 cavalry	2 discipline	12 fighter	2 guns
23 boy	14 citizen	1 disliked	12 fighting	
1 boys	3 civilian	1 double	1 firearm	1 helmet
46 brave	1 clothes	2 drill	2 fort	8 hero

1 him	2 marshal	5 patriot	1 salute	1 training
1 hobo	2 mechanic	1 patriotic	1 sentry	1 travel
1 home	17 military	1 patriotism	1 servant	1 troop
1 hurt	3 militia	3 person	1 service	1 troops
	1 murder	1 Philippines	1 show	
2 infantry	1 music	1 police	1 sick	39 uniform
	2 musket	6 policeman	1 single	1 United States
1 jacky		1 protection	1 smart	3 upright
1 Jim	1 N.	2 protector	1 sorrow	1 uprightness
	1 nation	1 proud	1 stateliness	
1 king	1 national		1 store	1 vallant
	2 navy	4 red	3 straight	3 veteran
5 lieutenant	1 necessary	1 redcoat	1 strength	3 volunteer
	1 nobility	1 regiment	1 strenuous	
3 male		2 regular	1 strict	94 war
189 man	1 obedience	1 respectable	4 strong	1 warfare
4 men	1 obey	1 Richmond	2 sword	12 warrior
1 manly	12 officer	3 rifle		3 West Point
12 march	1 officers		2 tall	2 widow
5 marching	1 order	58 sailor	1 tent	2 work
1 marine	2 orderly	1 sailors	4 tin	

47. CABBAGE

1 away	30 eat	30 head	3 onions	2 soup
	6 eating	1 heads		4 sour
1 bad	6 eatable	1 healthy	1 paper	1 spice
2 beans	3 eatables	2 heavy	1 parsley	1 spinach
11 beef		1 herb	16 patch	1 sprouts
1 beet	11 farm	1 home	46 plant	3 stalk
2 beets	1 farming	2 horrid	3 plants	1 stew
1 boiled	3 field		1 plantation	1 stinking
1 broth	2 fields	3 indigestion	1 planted	1 strong
1 bud	1 fine	1 kale	1 planting	1 sustenance
1 bunchy	4 flower	2 kraut	1 plate	3 sweet
	22 food		5 pork	
2 carrot	7 fruit	8 large	5 potato	3 taste
1 carrots		9 leaf	18 potatoes	1 tender
1 catup	43 garden	11 leaves	1 purple	2 tomato
17 cauliflower	1 German	11 letters		2 tomatoes
1 cigar	1 Germans	1 lot	1 quart	20 turnip
1 cold-slaw	1 goat			6 turnips
1 cook	13 good	2 meal	2 rabbit	
4 cooking	41 green	8 meat	3 red	1 unnecessary
1 corn	3 greens	2 Mrs. Wiggs	2 rose	1 unwholesome
1 cucumbers	3 ground	1 mustard	4 round	
1 cut	1 grow			1 Valhalla
	1 grows	1 nice	5 salad	204 vegetable
1 decayed	2 growing	1 nothing	17 sauerkraut	10 vegetables
1 disagreeable	1 growth		2 slaw	4 vinegar
2 dish		2 odor	11 smell	1 Virginia
1 dislike	1 ham	2 onion	1 soapy	
4 dinner	3 hard		2 solid	1 white

48. HARD

2 adamant	2 cabbage	1 earth	2 glass	1 indestructible
3 apple	1 callous	1 earthen	1 glittering	1 individual
1 apples	2 candy	17 easy	1 gold	1 indurated
	1 can't	2 egg	2 good	1 inflexible
2 bad	3 chair	1 eggs	1 granite	1 injustice
5 ball	1 character	1 examination	2 ground	1 irksome
1 baseball	7 coal			44 iron
1 bed	1 coarse	1 face	1 hammer	
1 bench	1 cold	1 farmer	2 harsh	1 kind
1 blackboard	1 crystallized	1 feary	2 heart	
6 board		4 feeling	2 hearted	1 labor
2 boards	1 dense	11 firm	2 heavy	2 lead
1 bone	3 diamond	2 firmness	1 hickory	2 lesson
1 bread	5 difficult	1 fist	1 hurt	1 lignum-vitae
1 break	1 disagreeable	4 flint		2 life
12 brick	1 do	16 floor	5 ice	1 low
2 brittle	1 durability	1 formidable	1 immovable	3 luck
2 bullet		1 fruit	1 impenetrable	

1 maple	2 pavement	1 rocky	1 strength	1 uneasy
3 marble	1 perplexing	11 rough	4 strong	1 unimpression-
1 mathematics	1 physics		1 stuff	able
2 mean	1 piano	1 saltpetre	6 substance	2 unpleasant
2 medium	1 principle	1 severe		1 unpliant
5 metal	1 pulpy	1 sidewalk	5 table	1 unripe
1 murder		15 smooth	1 tack	1 unyielding
1 mush	1 quality	367 soft	1 thick	1 uselessness
	1 questions	15 solid	1 tight	
1 nail		1 stale	2 touch	1 very
1 nails	1 raining	14 steel	12 tough	
1 natural	4 resistance	1 stick	2 tree	1 walnuts
1 nut	1 resistant	1 stingy	1 trouble	2 water
1 nuts	1 rigid	102 stone	1 turnip	1 wisdom
	1 road	1 stones		65 wood
1 oak	38 rock	1 stony	5 unbreakable	19 work
1 opaque	4 rocks	2 stove	5 uncomfortable	2 working

49. EAGLE

3 air	1 cruelty	1 graceful	3 paper	1 spread
1 altitude	4 dollar	1 gray	1 parrot	11 strength
7 America	5 dove	1 great	1 partridge	3 strong
12 American			1 peacock	1 sun
4 animal	1 eggs	13 hawk	2 pigeon	3 swallow
1 aspiring	8 emblem	1 height	2 power	1 swan
	12 eye	21 high	5 prey	4 swift
1 bald	1 eyed		1 quail	1 swiftness
8 beak	1 eery	1 insect	1 quarry	1 sword
2 beast		1 insignium		
2 bill	1 falcon	1 keen	1 robin	1 talon
268 bird	7 feathers	4 king	1 rock	1 talons
6 birds	1 fierce			1 tern
1 birdie	2 flag		1 scarce	1 Times
1 black	6 flies	9 large	3 sharp	1 turkey
1 butterfly	22 flight	1 lark	1 sight	
2 buzzard	1 flint	1 liberty	2 sky	2 United States
	46 fly	2 lofty	2 sly	
1 carnivorous	23 flying	2 might	5 soar	3 vulture
1 carrion	2 fyer	14 mountain	3 soars	
1 chickens	3 fowl	3 mountains	14 soaring	8 wing
2 claws	3 freedom		1 solitude	16 wings
1 clouds		12 nest	1 space	
1 contour	1 glare	4 owl	6 sparrow	1 young
1 crag	1 glorious		1 sport	
3 crow	2 golden			2 Zoo

50. STOMACH

32 abdomen	3 cancer	1 dress	5 gastric	2 internal
31 ache	1 care	1 duodenum	1 Gertrude	28 intestine
21 anatomy	2 careful	4 dyspepsia	4 good	32 intestines
2 animal	1 cat		1 grind	
5 appetite	1 cavity	45 eat	2 grinding	1 juice
1 apples	1 chart	27 eating		
2 arm	18 chest	8 empty	2 hand	4 large
	1 coil	1 engine	1 hands	1 leg
1 back	2 condition	1 excellent	9 head	1 limb
1 bad	1 contain		5 health	13 liver
7 bag		1 face	24 heart	1 living
1 basket	1 delicate	1 fat	1 bog	1 lung
2 beast	1 diaphragm	1 feed	6 hunger	3 lungs
1 beef	6 digest	1 feeding	6 hungry	
6 belly	1 digesting	1 feet	2 hurt	1 machinery
1 belt	50 digestion	102 food	1 hurts	5 man
1 biology	3 digestive	2 foot	1 hygiene	1 meal
99 body	2 digests	1 flesh		1 meals
13 bowels	7 dinner	1 frame	1 illness	5 member
1 brain	1 disease	1 front	17 indigestion	1 milk
1 bread	1 distress	7 full	5 inside	1 mortal
1 breast	2 doctor	1 function	2 interior	3 mouth
				1 muscle

2 nausea
3 necessary
1 necessity
1 neck
1 nuisance

1 object
1 oblong
4 oesophagus
51 organ
3 organs
1 overeating
1 overloaded

28 pain
3 part
9 person
3 physiology
1 picture
2 poor
1 portion
4 pouch
1 psychology
3 pump
2 punch

1 receiver

3 receptacle
2 reservoir
1 rest
3 round

1 self
10 sick
7 sickness
1 skin
2 small
4 soft
1 sore
2 sour

1 specimen
1 strong
1 suffer
1 suffering
1 sustenance
2 system

1 tender
1 tenderness
1 thought
1 throat
2 tongue
25 trouble
1 troubles

5 troublesome
1 trunk
3 tube

1 upset
1 useful

2 vessel

1 want
1 water
3 weak
1 weakness
1 work

51. STEM

1 anything
1 appendage
43 apple
1 apples

1 base
3 beginning
1 blade
3 blossom
1 boat
1 body
1 brain
33 branch
1 branches
1 broad
1 broom
4 bud
5 bush
1 butt

2 cane
2 cherry
3 connection
1 connects
2 cord
2 core

10 end

1 ending
1 evolution

1 fibre
2 fibres
1 finger
259 flower
7 flowers
2 foundation
14 fruit

1 grass
9 green
3 growth

20 handle
1 hard
1 head
2 hold
1 holding
4 holder
1 holes

1 join
96 leaf
4 leaves

1 leg
3 length
1 lettuce
1 life
2 light
1 lily
4 limb
1 living
18 long

1 match

1 necessity

1 object
1 offshoot
1 organ

4 part
1 parts
1 particle
2 peach
9 pear
1 peduncle
3 pencil
4 petal
1 pick

3 piece
70 pipe
1 pit
74 plant
1 plow
6 point
1 poppy
1 projection
1 prop

1 reed
1 river
1 rod
27 root
1 roots
21 rose

2 shank
6 short
7 slender
1 small
1 smoke
1 soft
21 stalk
2 steps
6 stern
14 stick

1 stiff
1 stone
1 stop
1 storm
2 straight
8 support

4 thin
2 thorn
2 tide
1 tobacco
1 top
44 tree
2 trees
3 trunk
7 twig

1 valve
1 violet
3 vine

7 watch
2 water
3 weed
3 wind
2 winding
3 winder
4 wood

52. LAMP

1 Aladdin
1 arc
6 articles

5 black
1 blaze
1 brass
12 bright
3 brightness
20 burn
10 burning
3 burner
1 burns

13 candle
2 chandelier
1 cheer
37 chimney
1 convenience

1 crockery
1 dangers
3 dark
2 darkness
1 daylight
1 distance
1 dull

5 electric
1 evening

5 fire
1 flame
1 full
2 furniture
4 gas
1 glaring

8 glass
7 globe

3 high
1 home
1 hot
1 house

2 illumination
7 kerosene

1 lantern
2 large
1 library
650 light
2 lights
4 lighted
1 lighten
2 lit

1 match

1 nickle
4 night

49 oil
1 ornament

1 petroleum
5 post
1 pretty

2 reading
1 red
1 Rochester
2 room

2 see
27 shade

1 shadow
1 small
4 smoke
1 smoked
1 smoking
1 smoky
2 stand
1 stove
1 student

8 table
1 tall

2 useful

2 vessel

1 warmth
23 wick
1 wisdom

1 maple	2 pavement	1 rocky	1 strength	1 uneasy
3 marble	1 perplexing	11 rough	4 strong	1 unimpression-
1 mathematics	1 physics		1 stuff	able
2 mean	1 piano	1 saltpetre	6 substance	2 unpleasant
2 medium	1 principle	1 severe		1 unpliant
5 metal	1 pulpy	1 sidewalk	5 table	1 unripe
1 murder		15 smooth	1 tack	1 unyielding
1 mush	1 quality	367 soft	1 thick	1 uselessness
	1 questions	15 solid	1 tight	
1 nail		1 stale	2 touch	1 very
1 nails	1 raining	14 steel	12 tough	
1 natural	4 resistance	1 stick	2 tree	1 walnuts
1 nut	1 resistant	1 stingy	1 trouble	2 water
1 nuts	1 rigid	102 stone	1 turnip	1 wisdom
	1 road	1 stones		46 wood
1 oak	38 rock	1 stony	5 unbreakable	19 work
1 opaque	4 rocks	2 stove	5 uncomfortable	2 working

49. EAGLE

3 air	1 cruelty	1 graceful	3 paper	1 spread
1 altitude	4 dollar	1 gray	1 parrot	11 strength
7 America	5 dove	1 great	1 partridge	3 strong
12 American			1 peacock	1 sun
4 animal	1 eggs	13 hawk	2 pigeon	3 swallow
1 aspiring	8 emblem	1 height	2 power	1 swan
	12 eye	21 high	5 prey	4 swift
1 bald	1 eyed	1 insect	1 quail	1 swiftess
8 beak	1 cyru	1 insignium	1 quarry	1 sword
2 beast				
2 bill	1 falcon	1 keen	1 robin	1 talon
568 bird	7 feathers	4 king	1 rock	1 talons
6 birds	1 fierce			1 tern
1 birdie	2 flag	9 large	1 scarce	1 Times
1 black	6 flies	1 lark	3 sharp	1 turkey
1 butterfly	22 flight	1 liberty	1 sight	
2 buzzard	46 fly	2 lofty	2 sky	2 United States
	23 flying	2 might	2 sly	3 vulture
1 carnivorous	2 flyer	14 mountain	5 soar	
1 carrion	3 fowl	3 mountains	3 soars	8 wing
1 chickens	3 freedom		14 soaring	16 wings
2 claws	1 glare	12 nest	1 solitude	
1 clouds	1 glorious	4 owl	1 space	1 young
1 contour	2 golden		6 sparrow	2 Zoo
1 crag			1 sport	
3 crow				

50. STOMACH

32 abdomen	3 cancer	1 dress	5 gastric	2 internal
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21 anatomy	2 careful	4 dyspepsia	4 good	32 intestines
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5 appetite	1 cavity	45 eat	2 grinding	1 juice
1 apples	1 chart	27 eating		
2 arm	15 chest	8 empty	2 hand	4 large
	1 coil	1 engine	1 hands	1 leg
1 back	2 condition	1 excellent	9 head	1 limb
1 bad	1 contain		5 health	13 liver
7 bag		1 face	24 heart	1 living
1 basket	1 delicate	1 fat	1 hog	1 lung
2 beast	1 diaphragm	1 feed	6 hunger	3 lungs
1 beef	6 digest	1 feeding	6 hungry	
6 belly	1 digesting	1 feet	2 hurt	1 machinery
1 belt	50 digestion	102 food	1 hurts	5 man
1 biology	3 digestive	2 foot	1 hygiene	1 meal
59 body	2 digests	1 flesh		1 meals
13 bowels	7 dinner	1 frame	1 illness	5 member
1 brain	1 disease	1 front	17 indigestion	1 milk
1 bread	1 distress	7 full	5 inside	1 mortal
1 breast	2 doctor	1 function	2 interior	3 mouth

2 nausea	28 pain	3 receptacle	1 specimen	5 troublesome
3 necessary	3 part	2 reservoir	1 strong	1 trunk
1 necessity	9 person	1 rest	1 suffer	3 tube
1 neck	3 physiology	3 round	1 suffering	
1 nuisance	1 picture	1 self	1 sustenance	1 upset
	2 poor	10 sick	2 system	1 useful
1 object	1 portion	7 sickness		2 vessel
1 oblong	4 pouch	1 skin	1 tender	
4 oesophagus	1 psychology	2 small	1 tenderness	1 want
51 organ	3 pump	4 soft	1 throat	1 water
3 organs	2 punch	1 sore	2 tongue	3 weak
1 overeating	1 receiver	2 sour	25 trouble	1 weakness
1 overloaded			1 troubles	1 work

51. STEM

1 anything	1 ending	1 leg	3 piece	1 stiff
1 appendage	1 evolution	3 length	70 pipe	1 stone
43 apple		1 lettuce	1 pit	1 stop
1 apples	1 fibre	1 life	74 plant	1 storm
	2 fibres	2 light	1 plow	2 straight
1 base	1 finger	1 lily	6 point	8 support
2 beginning	259 flower	4 limb	1 poppy	
1 blade	7 flowers	1 living	1 projection	4 thin
3 blossom	2 foundation	18 long	1 prop	2 thorn
1 boat	14 fruit			2 tide
1 body		1 match	1 reed	1 tobacco
1 brain	1 grass		1 river	1 top
33 branch	9 green	1 necessity	1 rod	44 tree
1 branches	3 growth		27 root	2 trees
1 broad		1 object	1 roots	3 trunk
1 broom	20 handle	1 offshoot	21 rose	7 twig
4 bud	1 hard	1 organ		
5 bush	1 head		2 shank	1 valve
1 butt	2 hold	4 part	6 short	1 violet
	1 holding	1 parts	7 slender	3 vine
2 cane	4 holder	1 particle	1 small	
2 cherry	1 holes	2 peach	1 smoke	7 watch
3 connection		9 pear	1 soft	2 water
1 connects	1 join	1 peduncle	21 stalk	3 weed
2 cord	96 leaf	3 pencil	2 steps	3 wind
2 core	4 leaves	4 petal	6 stern	2 winding
		1 pick	14 stick	3 winder
10 end				4 wood

52. LAMP

1 Aladdin	1 crockery	8 glass	1 match	1 shadow
1 arc		7 globe		1 small
6 articles	1 dangers		1 nickle	4 smoke
	3 dark	3 high	4 night	1 smokes
5 black	2 darkness	1 home		1 smoking
1 blaze	1 daylight	1 hot	49 oil	1 smoky
1 brass	1 distance	1 house	1 ornament	2 stand
12 bright	1 dull			1 stove
3 brightness		2 illumination	1 petroleum	1 student
20 burn	5 electric		5 post	
10 burning	1 evening	7 kerosene	1 pretty	8 table
3 burner				1 tall
1 burns	5 fire	1 lantern	2 reading	
	1 flame	2 large	1 red	2 useful
13 candle	1 full	1 library	1 Rochester	
2 chandelier	2 furniture	650 light	2 room	2 vessel
1 cheer		2 lights		
37 chimney	4 gas	4 lighted	2 see	1 warmth
1 convenience	1 glaring	1 lighted	37 shade	23 wick
		2 lit		1 wisdom

53. DREAM

1 absence	1 eyes	2 lie	1 psychology	1 stale
1 angel	2 falling	1 like	1 purple	1 startling
1 angels	9 fancy	2 love		1 story
1 anger	1 fantasy	1 M.	1 queer	14 sweet
1 anything	1 fear	2 man	1 quiet	1 talk
6 asleep	1 feeling	1 mare	1 realization	1 terrible
11 awake	1 feelings	1 meditate	1 recollection	3 things
1 awaking	1 forgotten	1 melancholy	1 relax	29 think
1 awaken	1 fortune	1 melody	1 remember	8 thinking
3 awakening	1 funny	1 mesmeric	2 repose	38 thought
		8 mind	1 reposing	22 thoughts
2 baby	1 girl	1 money	3 rest	1 tiring
16 bad	7 good	1 music	6 restless	1 trouble
4 beautiful	1 goodness		1 restlessness	2 true
11 bed	1 grand	2 nature	2 reverie	
3 bliss	1 grieving	1 never		1 uncomfortable
1 book		3 nice	2 sad	1 unconscious
1 boy		42 night	1 sadness	1 unconsciousness
	2 hallucination	14 nightmare	1 scene	1 uneasiness
1 comfort	3 happiness	1 no	1 second	2 uneasy
2 consciousness	1 heaven	1 none	1 semiconscious	1 unfortunate
1 conversation	3 home	2 nonsense	1 sensation	5 unpleasant
	1 hope		1 sense	1 unpleasantness
1 dangerous	3 horrible	1 object	1 shade	2 unreal
1 darkness		1 omen	1 shadows	2 unrest
1 days	1 idea	1 on	1 short	1 unstable
2 death	3 illusion	1 opium	2 sickness	
1 delusion	2 imaginary	1 paradise	1 sight	1 vacancy
1 delusions	12 imagination	1 patients	1 sights	1 vagueness
1 disagreeable	5 imagine	1 peace	339 sleep	43 vision
1 disappointment	1 imaginings	2 peaceful	30 sleeping	6 visions
1 discontent	2 impression	1 phantoms	2 sleeper	1 vivid
2 disturbance	2 indigestion	3 picture	2 sleeplessness	
1 disturbing	1 insanity	1 pillow	2 sleepy	9 wake
1 done	1 inspiration	1 play	1 slept	1 waking
1 dread		38 pleasant	20 slumber	1 wander
2 dreary	1 kind	13 pleasure	1 something	4 wandering
		1 presentiment	1 somnambulist	1 weird
1 easy	1 land	1 prophesy	2 snore	2 wonder
1 expectation	2 languid		1 soliloquy	1 woods
1 experiment				1 work

54. YELLOW

1 alive	1 coarse	9 flowers	2 lily	34 red
2 amber	301 color	3 fruit		1 ribbon
3 apple	1 coloring		1 maize	9 rose
1 autumn	1 common	1 G.	1 man	
	1 complexity	1 garments	1 marigolds	1 satin
5 banana	1 corn	1 gay	1 matter	1 school
3 beautiful	2 cream	1 glare	1 mellow	1 sear
2 beauty	1 crocus	13 gold	1 melon	4 shade
1 becoming		5 golden	1 molasses	1 silk
8 bird	3 daffodil	1 goldenglow		2 sky
24 black	3 daffodils	5 goldenrod	1 nature	2 soft
1 blossoms	6 daisy	1 goods	1 nice	1 spectrum
41 blue	7 dandelion	1 gorgeous		1 suit
23 bright	6 dark	1 grass	1 obnoxious	1 sulphur
2 brightness	1 delightful	41 green	1 ochre	21 sun
1 brilliant	1 desert		42 orange	8 sunflower
13 brown	1 disagreeable	2 hair		7 sunlight
1 buff	1 dog	2 house	5 paint	1 sunshine
7 butter	1 door	1 hue	2 pale	
11 buttercup	1 dream		3 pansy	1 table
2 buttercups	9 dress	1 ink	4 paper	2 tan
8 butterfly	1 dresses		2 peach	1 tarnish
	1 dull	2 jasmine	1 pears	1 tree
4 canary		3 jaundice	1 pillow	
1 cat	1 ecru	6 jealousy	13 pink	1 ugly
2 China	1 egg	1 jonquil	1 plague	1 unharmonious
3 Chinaman		2 journal	1 poppy	
3 Chinese	1 fade		4 pretty	2 violet
2 Chinese	1 fancy	2 kid	1 primrose	1 wagon
1 chrome	1 fence		2 pumpkin	1 warm
1 chrysanthemum	3 fever	2 leaf	1 pumpkins	1 warmth
1 chrysanthemums	4 flag	1 leaves	1 pure	1 wax
	1 flame	7 lemon	5 purple	1 wheat
3 cloth	38 flower	14 light		70 white

55. BREAD

1 appetite	6 crust	2 grain	1 milk	1 sour
2 bake	1 cut	1 ham	1 mixing	8 staff
4 baking	3 daily	1 hand	1 necessary	3 stale
3 baker	4 diet	3 hard	2 necessity	1 strengthen
1 bakery	6 dinner	2 heavy	1 needful	2 substance
14 biscuit	1 dish	1 holes	4 nourishment	1 substantial
2 biscuits	26 dough	2 home	1 oatmeal	1 sugar
4 blue	1 doughnuts	1 hot	1 pantry	1 sustenance
1 board	1 earn	7 hungry	1 pastry	4 sweet
1 box	<u>148</u> eat	4 hungry	1 plate	3 table
2 breakfast	44 eating	8 knife	1 pudding	2 tea
3 brown	28 eatable	23 life	1 roll	1 toast
1 buns	6 eatables	8 light	2 rolls	1 tough
<u>151</u> butter	1 edible	1 living	6 rye	1 useful
15 cake	1 feed	7 loaf	1 salt	9 water
1 cheese	88 flour	1 lunch	1 salty	21 wheat
1 children	<u>191</u> food	1 making	1 satisfaction	15 white
1 color	3 fresh	2 man	1 sister	1 wholesome
1 common	2 fruit	1 meal	8 soft	1 wine
1 cookies	21 good	5 meat		1 winner
1 corn	2 graham			8 yeast
1 crackers				
1 crumba				

56. JUSTICE

2 action	3 do	1 have	1 merit	4 satisfaction
2 administered	2 doing	1 heaven	1 mind	1 satisfied
1 administration	1 done	1 help	1 moral	1 satisfying
2 all	1 Dr. E.	1 him	1 mother	5 scales
1 always	5 duty	5 honest	1 never	2 severe
1 ask	1 elusive	3 honesty	1 nobility	1 severity
1 authority	1 emblem	7 honor	1 noble	1 sorrow
1 B.	1 employer	1 impartial	1 none	3 square
1 bad	1 energy	1 iniquity	1 nonsense	1 squareness
1 bed	3 equal	1 injury	1 obey	1 squire
3 blind	9 equality	26 injustice	1 obtain	4 statue
1 blindfolded	1 equality	1 innocent	1 oppression	1 story
1 body	3 equity	1 J.	4 order	3 supreme
1 caught	2 even	2 jail	1 pardon	2 sure
1 charity	1 exactness	1 joy	4 partiality	1 tranquility
1 chastise	1 execution	<u>91</u> judge	1 peace	6 true
1 chief	32 fair	1 judged	<u>143</u> perfect	14 truth
1 clearness	21 fairness	6 judgment	1 person	2 truthfulness
1 comfort	1 favor	3 jury	1 picture	1 unbias
3 command	1 fear	3 just	1 Plato	1 unfairness
1 commanding	1 fine	4 justified	1 police	1 unhappiness
1 conqueror	6 freedom	6 kindness	1 policeman	3 unjust
1 constable	1 friendship	1 lacking	1 politics	1 uprightness
64 court	1 gift	1 large	1 popular	1 vengeance
2 courts	1 give	74 law	1 power	3 virtue
1 Creator	3 given	2 lawful	1 privilege	2 well
1 crime	3 God	4 lawyer	1 purity	1 wicked
1 criminal	1 godliness	2 lenient	1 reason	1 willingness
2 cruelty	14 good	11 liberty	2 reward	2 wisdom
1 dealing	2 goodness	1 lots	<u>157</u> right	1 wise
1 deeds	1 govern	1 love	3 righteous	2 work
1 defying	3 government	2 magistrate	13 righteousness	8 wrong
1 delayed	1 guilty	13 man	1 rightly	1 yes
1 demand	1 happy	1 merciful	1 rightness	1 yield
1 deserved	1 harm	28 mercy	1 rights	
2 dispute	1 havv		1 ruler	
1 distribution				

57. BOY

2 action	1 dog	1 incorrigible	1 mother	3 son
2 active		1 industrious	1 muscles	1 spirit
2 activity	1 Edward	2 infant	1 myself	1 spoiled
1 agility	1 eighteen	1 inhabitant		2 sport
3 animal	1 embryonic	1 innocent	1 naughty	1 street
3 athletic	1 errand		2 Ned	2 strength
2 athletics		1 jacket	1 nephew	3 strong
	1 fair	2 James	1 newspaper	2 suit
6 baby	3 female	1 Jimmy	3 nice	1 sweetheart
9 bad	1 fight	1 Joe	7 noise	1 swimming
10 ball	1 flesh	1 joyful	3 noisy	
1 barefoot	1 foolish	1 jump	1 nuisance	
5 baseball	1 football	1 jumper		3 tall
1 beautiful	1 Frank	2 juvenile	1 obedient	1 terror
6 being	4 friend		1 out	1 think
1 Ben	2 frolic	4 kid		1 Thomas
2 body	4 fun		6 pants	2 top
1 boisterous	1 funny	7 lad	1 Paul	1 toys
1 book		2 large	11 person	1 Tracy
2 bright	1 games	1 laugh	20 play	1 trait
6 brother	419 girl	1 legs	1 plays	1 tramp
2 busy	7 good	2 life	1 playful	1 trouble
	1 grown	3 little	1 playfulness	
1 cap	1 growth	3 lively	2 pupil	1 useless
1 careless	2 gun	1 maid	6 rough	1 walk
1 Charles	1 handsome	63 male	1 running	1 water
1 chicken	1 Harry	104 man	1 runs	1 whistle
86 child	1 hat	1 manhood		1 whistles
1 children	1 head	1 mankind	1 scallywag	1 wicked
1 class	1 hearty	1 manliness	2 scamp	2 wild
1 clothes	1 hero	1 manly	1 scholar	1 wildness
1 clothing	2 hood	1 marbles	11 school	2 woman
2 companion	2 hoop	3 masculine	4 sex	1 woods
1 cousin	9 human	2 master	1 sharp	1 work
1 curls	1 humanity	1 meanness	2 shoes	1 working
1 dead	1 imbecile	1 Michael	14 small	22 young
1 development	1 imperfect	11 mischief	2 smart	1 youngster
2 dirty		7 mischievous	1 smiles	33 youth
				1 youthful

58. LIGHT

1 agreeable	931 dark	1 glare	7 morning	1 sign
8 air	93 darkness	1 gleam		8 sky
1 airy	2 dawn	3 good	1 nice	1 soft
1 arc	81 day		3 night	1 sound
1 assistance	2 daylight	2 hair	1 necessity	1 space
1 awake	6 daytime	4 happiness	1 paper	1 splendor
	1 dimness	1 health	1 pathway	1 steam
1 beacon	1 distance	1 healthy	1 peaceful	55 sun
2 beautiful	1 dress	1 hearted	1 pink	1 sunlight
1 beautifying	1 dull	8 heat	1 pipe	11 sunshine
1 beauty		1 heaven	1 placid	1 swift
1 biscuit	2 early	5 heavy	3 pleasant	1 transparent
3 black	1 easy	1 hills	1 pleasure	1 truth
2 blue	1 education		1 plenty	1 twilight
1 bread	7 electric	1 illuminate		1 ventilation
47 bright	8 electricity	7 illumination	2 rays	1 Vera
21 brightness	1 element	1 joy	1 red	1 vibration
3 brilliant	1 emptiness	1 kerosene	1 reflection	2 vision
1 brown	1 enjoy	1 knowledge	1 right	1 vivid
2 burn	1 evening		3 room	1 waist
1 burning	1 eyes	1 laboratory	24 see	
	1 fair	82 lamp	3 seeing	2 warmth
3 candle	6 feather	1 lamps	1 seen	1 waves
1 cheer	1 feathers	7 life	8 shade	1 weak
2 clear	6 fire	1 long	2 shadow	2 weight
2 clearness	1 flame	1 look	1 shadows	8 white
2 coat	1 fleshy	1 luminous	2 shine	2 whiteness
19 color	1 forward		2 shines	15 window
2 comfort	1 fuel	1 match	2 shining	1 world
1 complexion		10 moon	3 sight	6 yellow
1 convenient	21 gas			
1 cork				

59. HEALTH

1 action	3 desirable	411 happiness	1 optimism	5 sound
2 activity	9 disease	7 happy		1 spirit
9 air	4 doctor	1 haste	1 pain	1 spirits
1 athletics		1 healing	8 perfect	1 state
	1 eating	1 healthful	6 person	112 strength
5 bad	5 enjoyment	1 healthy	3 physical	1 strengths
1 baseball	2 everything	1 heaven	1 physician	31 strong
1 beautiful	1 excellent	2 holiness	1 physiology	1 sturdy
10 beauty	1 excursion	2 hygiene	1 play	1 success
1 better	8 exercise		2 pleasant	
4 blessing	1 existence	3 ill	14 pleasure	1 temper
1 blood		13 illness	1 plenty	2 thankful
1 board	1 face		2 poor	1 trouble
9 body	2 feel	6 joy	1 preserve	
1 boon	12 feeling		1 proper	1 unhealthiness
2 boy	1 fine	5 life	4 prosperity	3 unhealthy
1 broad	4 food	1 light		2 useful
2 buoyancy	1 form	1 live	1 quick	
	2 fortune	3 living	1 red	1 valuable
1 care	1 freedom	2 luck	3 riches	11 vigor
1 careful	1 fun	1 luxury	9 robust	1 virility
1 cheer		4 man	1 rose	
1 circulation	3 gift	1 me	3 rosy	1 walking
1 cleanliness	1 girl	3 medicine	1 round	2 want
1 climate	2 gladness	1 merriment	2 rugged	1 warm
1 color	1 golf	1 mother		1 water
26 comfort	94 good	1 mountain	1 self	1 weakness
6 condition	1 goodness	1 moving	9 sick	76 wealth
1 constitution	2 grand		2 sickly	63 well
1 consumption	1 gymnasium	1 necessary	153 sickness	1 wholesome
1 contentment	1 gymnastics	1 needed	1 smiles	1 woman
1 convenience		1 needful		1 wonderful
2 country		4 normal		1 youth

60. BIBLE

1 academy	1 encyclopedia	1 Jacob	1 paper	1 sour
1 all	1 excellent	4 Jesus	1 piety	1 stones
1 ancient		2 knowledge	2 pious	2 stories
	1 fable	1 Koran	3 pray	4 story
1 beauty	1 faith		2 praying	1 strength
1 belief	2 family	4 large	19 prayer	2 studies
1 beneficial		3 law	7 prayers	6 study
2 black	1 Genesis	1 leaf	13 prayer-book	6 Sunday
28 book	1 glass	1 leaves	2 preacher	
1 books	43 God	1 lectern	1 preaching	3 table
	28 good	1 legend	1 prophet	1 teach
1 catechism	12 goodness	2 lie	4 psalms	1 teacher
8 Christ	3 gospel	3 life		1 teachings
3 Christian	1 gospels	2 light	1 rarely	24 Testament
50 church	1 grand	2 literature	31 read	4 text
3 class	1 guide	5 Lord	19 reading	1 tradition
1 clean		2 love	1 reformation	2 true
1 clergyman	2 heaven		89 religion	17 truth
2 comfort	1 heavy	1 message	4 religious	1 truthfulness
2 command	1 help	1 mine	1 reverence	
1 commandment	26 history	3 minister	1 righteous	1 unnecessary
2 commandments	5 holiness	2 Moses	3 rot	2 useful
1 creed	47 holy	1 mother		
	2 home		3 sacred	1 verses
1 devotion	1 hope	1 necessary	2 Saviour	
1 directions	2 hymns	1 noble	2 school	1 weariness
1 drama			17 scripture	8 word
2 duty	1 instructive	2 obey	3 scriptures	1 words
		1 open	1 sermon	2 worship
			1 shelf	1 writ

61. MEMORY

2 absent	1 English	5 intelligence	1 patient	1 song
1 acquire	1 Europe	1 interpret	1 pen	2 sound
1 aid	2 events	1 invisible	2 perception	1 splendid
1 analysis	1 everything	2 person	2 picture	1 stanza
1 ancient	2 excellent	1 joy	1 pictures	1 storehouse
2 association	1 experiment		1 pleasantness	1 story
1 attention	1 faces	1 keep	2 pleasure	1 strengthen
1 attitude	1 faculty	1 know	3 poem	1 strong
1 aunt	1 failing	4 knowledge	1 poems	1 student
	1 fails		7 poetry	4 study
1 back	4 fair	2 lack	23 poor	1 studying
19 bad	1 fancy	2 lacking	1 power	1 sure
1 beautiful	1 far	1 language	1 psychology	7 sweet
1 bird	1 farther	1 lasting	1 quick	1 swift
3 blank	1 fascination	1 learn		1 swing
2 book	1 faulty	2 learning	1 reading	1 teacher
3 books	1 feeling	1 lecture	1 reason	1 tender
46 brain	1 fine	1 length	4 recall	5 test
5 brains	1 fleeting	2 lessons	2 recalling	1 thankful
1 brightness	1 fool	1 light	3 recognition	1 things
1 bucket	25 forget	3 long	2 recollect	58 think
	3 forgetful	1 loss	16 recollection	38 thinking
1 catechism	37 forgetfulness	1 love	3 recollections	1 thinks
1 cause	5 forgetting	1 magnificent	1 reflect	51 thought
1 charming	3 forgotten	3 man	27 remember	28 thoughts
4 childhood	1 forty	1 marvelous	4 remembering	8 thoughtful
1 clear	1 friends	1 me	18 remembrance	3 thoughtfulness
2 concentration	2 gone	1 memorandum	2 remind	1 thoughtless
1 connection	63 good	1 memorizing	1 reminder	1 time
1 conscience	1 graveyard	4 mental	2 reminiscence	1 train
2 consciousness	1 great	1 mindful	1 reminiscences	1 training
	2 green	2 mnemonics	1 reproductive	1 tree
1 dancing	1 happiness	1 mother	1 result	1 unconsciousness
1 death	1 happy	1 mud	1 retain	3 understand
1 debts	9 head	1 my	2 retaining	6 understanding
2 defect	1 hearing	1 myself	5 retention	1 unstable
1 defective	2 history	1 names	3 retentive	2 useful
1 desirable	2 home	3 necessary	1 retrospect	
1 deterioration	1 hopefulness	1 necessity	1 sadness	2 verses
1 dictionary	2 idea	1 needful	1 scenes	1 weak
1 dim	1 image	1 noble	1 scholar	1 well
1 distant	2 imagination	1 none	6 school	1 will
1 dream	1 impossible	1 oblivion	1 sensation	1 wit
3 dreams	1 increase	2 senses	5 sense	1 wonderful
1 dull	7 intellect	2 senses	7 short	2 work
1 easy		8 past	1 simple	2 youth
1 educated				
1 effort				
1 elusive				

62. SHEEP

225 animal	1 eat	1 group	5 meat	1 rocks
18 animals	4 farm	1 hair	1 meekness	1 run
1 astray	1 feed	1 harmless	3 mountain	1 running
1 awkward	12 field	4 herd	60 mutton	
	6 fields	1 herder		1 shear
1 baa	3 fleece	1 hill	1 nature	1 shearing
3 beast	1 flesh	2 hillside		1 shears
1 bed	34 flock	1 horn	1 oxen	15 shepherd
1 Bethlehem	1 flocks	1 horse		1 simple
5 black	4 fold	1 humanity	2 park	1 sleep
1 blind	1 follow		27 pasture	2 small
1 buffalo	2 food	5 innocence	8 pastures	1 soft
	1 foolish	2 innocent	1 peace	1 spring
1 calf	1 fowl		1 peaceful	2 stock
1 calm	1 fur	1 jump	1 pet	1 stupidity
47 cattle	1 gentle		1 picture	1 tick
1 cloth	1 gentleness	151 lamb	2 pig	1 trust
3 country	1 goat	36 lambs	1 plains	
22 cow	19 goat	1 landscape	1 play	1 wander
5 cows	10 goats	2 large	4 pretty	1 water
	2 good	1 lecture	2 quadruped	18 white
1 death	4 grass	1 loving	1 raising	2 wolf
2 deer	1 graze	1 many	1 ram	143 wool
2 dirty	5 grazing	3 meadows		10 woolly
6 dog				
2 dogs				

63. BATH

1 baby	1 dry	2 invigorating	2 pleasure	1 springs
1 basin	1 English	1 joy	2 plenty	10 swim
2 bathe	1 every	1 large	3 plunge	5 swimming
6 bathing	1 filth	1 luxury	1 porcelain	1 take
1 beneficial	1 filthiness	1 man	1 refreshed	1 taken
1 boat	1 fine	1 massage	6 refreshing	2 toilet
1 boy	1 flowers	2 morning	1 refreshment	6 towel
100 clean	1 fluid	2 nakedness	2 river	2 towels
1 cleaning	2 fresh	1 neatness	3 robe	71 tub
100 cleanliness	7 good	5 necessary	6 room	1 vapor
2 cleanly	9 health	2 nice	1 salt	1 vessel
9 cleanness	1 healthful	1 none	1 sanitary	1 want
6 cleanse	1 healthiness	6 ocean	1 scrub	3 warm
8 cleansing	4 healthy	1 often	1 sensation	102 wash
14 cold	10 hot	1 once	3 shower	16 washing
3 comfort	4 house	3 pleasant	1 sleeping	33 water
3 cool	1 invigorates		13 soap	5 wet
1 Creal Springs			1 soothing	1 wood
1 delight			1 sponge	2 yesterday
4 dirt			4 spray	
5 dirty				

64. COTTAGE

2 abode	2 door	1 ivy	1 patients	1 simplicity
1 agreeable	23 dwelling	5 lake	1 peace	1 sleep
1 alone	2 family	1 lane	1 people	30 small
1 apartments	1 far	1 large	1 picturesque	1 snug
2 barn	4 farm	4 lawn	1 place	1 stands
1 beach	1 fence	4 little	1 pleasantness	3 structure
1 beautiful	6 field	17 live	1 pleasure	9 summer
1 box	2 fine	5 living	1 pond	1 sweet
3 brick	4 flowers	1 log	4 porch	1 Switzerland
1 brook	2 frame	1 lonesomeness	1 prettiness	1 table
2 brown	7 garden	4 love	3 pretty	4 tent
31 building	3 green	2 low	1 pudding	2 thatched
13 bungalow	1 habitable	1 lumber	1 reside	1 tower
3 cabin	3 habitation	1 Maine	4 residence	1 trees
1 camp	1 hamlet	15 mansion	1 resident	3 two
2 camping	1 hammock	1 name	1 resort	1 unity
1 Cape Cod	1 handsome	3 neat	3 rest	2 vacation
2 castle	5 happiness	1 Newburgh	1 river	1 veranda
1 chair	1 happy	4 nice	1 rod	1 villa
1 cheese	3 hill	2 one	3 roof	3 village
3 city	56 home	1 open	1 roomy	1 vine
15 comfort	1 homelike	1 orchard	2 roses	3 vines
2 contentment	1 homestead	1 outing	1 rustic	
1 cottage	1 hope	1 painted	1 school	3 white
36 country	1 hospital	2 palace	10 sea	2 window
2 couple	461 house	2 parsonage	5 seashore	1 woman
2 cosy	1 houses	2 patient	2 seaside	11 wood
1 cute			6 shelter	1 wooden
1 distant	1 innocence		2 shingles	3 woods
			2 shore	1 yard

65. SWIFT

2 active	7 deer	1 hear	1 near	4 slowly
2 aeroplane	1 degree	1 high	1 Niagara Falls	16 smart
1 ahead	1 doctor	28 horse	1 power	1 smartness
1 antelope	2 dog	12 hurry	1 quick	3 smooth
13 arrow		1 hurrying	117 quick	29 speed
11 automobile	8 eagle		13 quickly	1 speedily
1 autos	2 easy	1 Indian	5 quickness	1 speeding
	3 engine		1 quiet	7 speedy
6 ball		1 kite		1 spinchilled
1 beauty	220 fast		6 race	2 spry
1 better	1 fastness	1 launch	27 rapid	1 steam
1 bicycle	1 fear	1 lazy	2 rapidity	1 stinging
16 bird	1 fish	2 light	2 rapidly	1 stone
1 birds	5 fleet	4 lightning	1 real	8 stream
1 boat	6 flight	3 lively	1 riding	2 strong
1 brisk	3 fly		18 river	2 sure
1 brook	3 flying	1 man	1 rivers	5 swallow
3 bullet	1 foot	1 Marathon	1 road	1 swallows
		1 Mercury	1 rocket	
1 cat	1 girl	1 messenger	19 run	1 throw
1 channel	1 go	1 meteor	20 running	2 tide
1 child	1 going	1 more	13 runner	1 time
1 choice	1 good	1 morning	1 rushing	18 train
1 clever	1 grand	2 motion		1 trains
1 creek	1 Greek	1 motoring	1 sail	
7 current		2 movement	1 sharp	1 walking
1 curve	1 hard	1 moving	1 shot	11 water
1 cutting	1 hare	1 muscles	1 sleigh	8 wind
	1 haste		190 slow	1 work

66. BLUE

1 air	1 cold	1 good	1 necktie	1 skies
1 azure	220 color	2 gram		220 sky
	2 colors	10 gray	12 ocean	1 soft
1 ball	2 coloring	54 green		1 somber
1 beautiful		1 hat	3 paint	1 space
1 becoming	1 dainty	5 heaven	1 pale	1 stripes
1 bell	24 dark	2 heavens	1 paper	1 suit
1 binding	5 deep	1 heavenly	1 pencil	
5 bird	1 depth	1 homesick	9 pink	2 tie
38 black	18 dress	1 hopeful	2 pleasant	1 tint
1 blood	1 dull	1 horizon	1 pleasing	7 true
1 blossom		1 house	1 policeman	2 truth
1 blotter	1 ether	1 hue	4 pretty	1 turquoise
1 bluebird	6 eyes		1 purity	
2 bluing		5 indigo	2 purple	1 unhappy
1 bluey	1 fair	6 ink		1 unrest
1 book	4 feeling		54 red	
5 bright	1 fidelity	1 lake	1 restful	1 velvet
8 brown	6 flag	8 light	3 ribbon	2 violet
	3 flower	1 lily	1 river	3 violets
1 cadet	1 forget-me-not	1 lonesome	1 room	2 washing
1 chemical				8 water
1 clock	1 gentian	2 melancholy	2 sad	47 white
7 cloth	1 globe	1 Monday	1 sailor	2 wind
3 clothes	2 gloominess		7 sea	
1 clothing	2 gloomy	1 navy	1 serge	2 Yale
1 cloud	1 glum		2 shade	27 yellow

67. HUNGRY

1 aching	2 appetizing	4 beggar	1 candy	1 crackers
1 ambitious		1 blacult	5 child	1 crave
1 angry	2 baby	5 boy	5 children	7 craving
2 animal	3 bad	26 bread	4 cold	1 cupboard
1 appealing	1 bananas	3 breakfast	1 college	
57 appetite	1 bear	1 butcher	1 country	1 dark

1 desirable	4 fatigue	1 lion	1 perishing	2 steak
11 desire	1 fatigued	5 longing	2 person	13 stomach
1 devil	4 fed	4 lunch	2 picnic	1 suffering
1 devour	1 feel	5 man	2 pie	1 sufficiency
31 dinner	8 feeling	4 me	2 plenty	1 sufficient
1 disagreeable	4 filled	1 meal	1 plow	2 supper
4 discomfort	136 food	3 meat	6 poor	1 table
1 displeasure	1 form	1 milk	1 potatoes	12 thirst
1 dissatisfaction	1 fulfillment	2 miserable	2 poverty	61 thirsty
1 dissatisfied	9 full	1 misery	1 present	1 thought
1 distress	3 fruit	1 nausea	1 ravenous	1 tiger
14 dog	1 gaunt	1 necessary	1 repletion	12 tired
1 dogs	1 Gertrude	2 need	1 sad	1 tiresome
1 dry	1 girl	1 needy	2 sandwiches	3 tramp
126 eat	2 gnawing	1 never	3 satiated	1 traveling
64 eating	1 good	1 nice	2 satiety	1 uncomfortable
2 eatables	1 grub	1 no	14 satisfied	1 unhappiness
1 emotion	1 hardship	1 noon	2 satisfy	4 unhappy
4 emptiness	1 Henrietta	1 nothing	1 school	4 unpleasant
13 empty	1 hog	1 nourish	1 sensation	3 unsatisfied
2 exhausted	2 hunger	2 now	1 sharp	1 very
9 faint	3 I	1 ocean	1 ship	1 viands
1 fainting	1 ice-cream	1 often	1 sick	1 victuals
5 famine	1 kitchen	5 pain	1 sleepy	1 walk
1 famish	2 lack	1 painful	1 slow	25 want
11 famished		1 pallid	2 sorrow	5 wanting
1 famishing		1 pang	10 starvation	5 weak
1 fascinating		1 peaches	8 starve	3 weakness
3 fast			15 starved	2 wish
5 fasting			29 starving	10 wolf

68. PRIEST

3 altar	1 conscientious	2 heaven	12 nun	8 robes
1 authority	1 console	1 high	1 office	1 ruler
1 belief	1 counsellor	3 holiness	11 parson	2 sacred
3 Bible	1 crucifix	15 holy	11 pastor	1 sacrifice
6 bishop	1 dignified	2 honor	1 people	1 sanctity
13 black	2 discipline	1 hood	3 person	1 school
1 blessing	1 discontent	1 house	1 piety	1 sent
1 book	1 dishonor	1 humble	4 pious	1 serious
1 boy	1 dislike	2 hypocrite	3 Pope	3 sermon
1 brother	1 divine	1 inspired	1 power	1 sermony
1 cassock	1 divinity	1 instruction	1 praise	2 servant
2 cathedral	5 doctor	2 Jew	3 pray	2 service
36 Catholic	1 doing	1 just	1 prays	1 services
2 Catholics	1 dominie	1 justice	8 prayer	2 shaven
4 Catholicism	1 dress	1 kind	1 prayers	1 shoot
1 ceremony	1 Dr. K.	1 knowledge	3 preach	1 sinner
1 chancel	1 duty	2 layman	2 preaches	1 sister
2 chapel	1 exalted	4 leader	35 preacher	1 slim
1 childhood	2 faithful	1 lecture	2 prelate	1 solemnity
166 church	2 fakir	1 Levi	2 priestess	1 sometimes
1 clean	1 fakirs	2 Levite	1 profession	1 spookism
30 clergy	3 fat	1 Lord	4 prophet	1 stern
62 clergyman	15 father	5 male	1 pulpit	1 student
1 cleric	1 follower	75 man	2 purity	2 Sunday
2 clerical	1 forgive	5 mass	2 rabbi	3 surplice
1 cloister	1 forgiveness	175 minister	57 religion	1 table
1 cloth	2 garb	5 monastery	7 religious	2 teacher
1 clothes	1 gentleman	9 monk	1 representative	1 ugly
1 collar	2 God	1 moral	1 repulsive	1 vest
1 comforter	9 good	1 noble	1 reverend	1 vicar
1 command	1 goodness		2 righteous	
1 communion	6 gown		1 road	
5 confession			12 robe	1 York
2 confessor				

69. OCEAN

1 afraid	1 crossing	1 Hudson	12 rough	2 swim
1 angry	1 current			1 swimming
11 Atlantic		1 immense	2 sail	1 tide
	1 dark	2 immensity	2 sailing	1 terrible
1 barge	67 deep	2 infinity	10 salt	1 traveling
3 bathing	1 deepness	2 joy	2 sand	1 trip
3 bay	10 depth		1 Sandy Hook	
5 beach	1 depths	12 lake	75 sea	1 valley
1 beautiful	2 distance	8 land	3 seas	7 vast
5 big		9 large	2 seashore	9 vastness
1 bigness	1 enormous	1 launch	1 seething	2 vessel
1 billows	1 Europe	1 liquid	1 shining	1 voyage
25 blue	2 expanse	1 Maine	24 ship	
6 boat	1 expansive	1 Mauretania	11 ships	1 waste
1 boats		2 shore	1 sky	427 water
2 body	1 float	1 might	1 sound	1 waters
1 boisterous	2 foam	3 mighty	1 storm	12 wave
3 breadth		2 motion	1 storms	45 waves
1 breeze	2 grand	1 power	1 steamboat	1 wavy
3 broad	2 grandeur	1 pretty	14 steamer	2 wet
1 Byron	3 great	1 quantity	1 steamers	1 white
	1 greatness		1 steamship	15 wide
1 Cape Cod	2 green	36 river	4 stream	1 wonder
2 Coney Island	2 Grove	1 roars	1 swiftess	1 wonderful
1 country	1 gulfs			

70. HEAD

1 above	1 combs	3 good	14 man	4 scalp
9 ache	1 consciousness	1 govern	1 man's	3 sense
1 aches	1 cover	1 great	1 masterpiece	1 senses
8 anatomy	1 covered		1 medium	1 sensible
2 animal	2 cow	150 hair	7 member	4 shape
1 appearance	11 cranium	11 hand	3 memory	1 shaped
2 arm	1 crown	2 hands	1 mentality	1 shoulder
3 arms		1 handsome	14 mind	12 shoulders
1 asymmetrical	1 director	2 hard	1 mouth	5 skull
	1 donkey	17 hat		7 small
1 baby's		1 headless	1 nail	2 sore
2 back	1 ear	8 heart	1 nation	1 square
1 bald	1 ears	2 heels	17 neck	2 statue
1 ball	1 emptiness	3 high	2 nose	2 stomach
1 beautiful	1 empty	2 highest		1 strong
1 beginning	1 encephalon	2 hot	5 organ	2 superintendent
5 big	1 end	1 house		1 symmetry
1 black	1 extremity	4 human	1 pain	
136 body	2 eye		6 part	3 tail
1 bonehead	10 eyes	1 individual	1 people	1 teeth
1 boss		2 intellect	15 person	2 thick
58 brain	13 face	3 intelligence	2 physiology	9 think
32 brains	1 father		1 planning	6 thinking
1 branch	1 feature	1 king	1 Pope	16 thought
1 bright	2 features	1 knee	3 power	4 thoughts
1 brown	26 feet	17 knowledge	2 president	1 tired
	1 figure		1 pretty	31 top
7 cabbage	1 firm	19 large	2 principal	2 trunk
3 captain	2 first	1 leadership	1 procession	
1 cattle	1 food	1 life		2 useful
2 cavity	64 foot	2 light	1 quarters	
2 chest	1 forehead	3 limb		1 whirl
2 chief	1 front	1 limbs	2 rest	1 wit
1 chop		1 little	21 round	1 woman
1 clear	1 girl	1 long	1 roundness	2 woman's
2 comb	1 glasses	1 louse	3 ruler	1 work

71. STOVE

3 article	1 dinner	213 heat	4 lid	1 round
1 bake	1 dirt	1 heating	3 lifter	1 rusty
1 baking	1 dishes	1 heats	1 light	1 shovel
59 black	217 fire	5 heater	1 long	1 sink
4 blacking	3 fireplace	2 heavy	2 metal	2 small
1 box	1 flame	1 home	1 oil	1 smoke
1 breakfast	3 food	89 hot	1 oven	3 steel
2 bright	1 Franklin	2 house	1 painful	1 structure
12 burn	1 fry	1 household	1 pipe	1 teakettle
2 burning	1 fuel	1 icebox	1 pipes	1 using
1 chair	6 furnace	1 implement	5 poker	2 utensil
1 chimney	8 furniture	51 iron	10 polish	32 warm
25 coal	1 furniturness	1 isinglass	2 radiator	42 warmth
2 comfort	7 gas	4 kettle	19 range	1 water
24 cook	1 German	11 kitchen	1 receptacle	2 winter
34 cooking	2 good	3 lamp	1 red	7 wood
1 cooks	1 grate	2 large	2 room	1 zinc
3 cover	2 hard	2 legs		
1 dark	1 hardware			

72. LONG

1 age	1 elongated	7 large	1 reed	1 stupid
1 anxiety	1 endless	1 lasting	3 ribbon	1 summer
1 arm	1 enough	1 lecture	1 ride	3 table
1 arms	2 eternity	1 legs	15 river	26 tall
2 avenue	1 extended	50 length	32 road	1 test
1 away	1 extension	6 lengthy	1 rod	2 thin
1 barn	1 extensive	1 level	1 room	2 thread
1 beach	1 extent	4 life	7 rope	1 throw
1 bench	8 far	5 line	1 row	15 time
1 big	1 feet	1 linear	1 rug	1 tiresome
1 blackboard	1 fellow	1 live	2 rule	1 tower
2 board	2 fence	1 Lusitania	4 ruler	3 track
6 boat	1 flagpole	5 man	1 shape	2 train
1 book	1 foot	7 measure	1 sharp	4 tree
1 boulevard	1 for	2 medium	1 shore	1 trip
1 bridge	2 giant	1 meter	413 short	1 vast
2 broad	1 girl	13 mile	1 shovel	1 very
1 Brooklyn	2 glass	1 miles	1 slender	1 wait
1 Bridge	4 grass	1 Mississippi	1 slim	2 waiting
1 broomstick	1 great	1 much	1 slow	7 walk
1 building	2 hair	1 name	1 small	1 walking
1 cable	2 hall	15 narrow	2 snake	1 walls
1 chimney	1 head	2 night	1 something	6 way
1 coat	1 height	1 nose	1 space	1 ways
1 courage	5 high	1 oblong	1 spacious	1 weary
1 craving	1 hill	2 path	1 spire	1 whale
9 day	1 hose	1 person	1 square	1 while
1 days	1 hours	1 pin	1 stay	7 wide
1 deep	1 house	1 pipe	1 steamer	1 winter
1 depth	2 island	1 plant	8 steeple	1 wire
1 desirable	8 journey	1 plenty	1 sticks	1 wishing
1 dimensions	1 labor	20 pole	2 story	1 without
81 distance	3 lane	4 railroad	1 straight	1 worm
3 distant	2 lanky	1 railway	6 street	4 yard
6 dress		1 rails	1 strength	2 year
1 duration			2 stretch	
			6 string	

73. RELIGION

1 Abraham	2 different	1 honor	1 obey	2 science
1 aesthetics	1 difficult	1 house	3 opinion	1 scripture
1 aim	1 dislike	1 hypocrisy	1 order	3 sect
1 all	1 divine		1 orthodox	2 sectarian
1 anything	4 doctrine	2 idea		1 self
1 association	1 dogma	1 ideas	1 paganism	3 service
2 atheism	2 doubt	1 ignorance	3 peace	1 sheeney
4 atheist	1 Druids	1 indefinite	3 people	1 society
	1 duties	1 indiscreet	1 perfect	1 solace
2 Baptist	2 duty	1 institutions	1 persecution	1 somewhat
1 beauty		1 irreligious	2 person	1 soul
39 belief	1 emotion	1 irreligious	3 persuasion	1 spirituality
1 beliefs	4 Episcopal		13 piety	1 stability
2 believe	1 Episcopalian	3 Jesus	13 pious	1 standby
1 believing	1 eternity	3 Jew	2 poor	1 study
1 believer	2 ethics	1 Jews	1 Pope	1 superstition
1 belong	1 everyday	4 Jewish	1 powerful	
1 belonging		1 just	2 practice	1 tabernacle
53 Bible	1 fair		2 pray	1 table
1 body	47 faith	2 kind	2 praying	1 teaching
2 books	1 fake	1 knowledge	21 prayer	1 temperament
3 brain	2 fanatic		5 prayers	2 temple
1 Buddha	1 fanaticism	1 law	2 prayer-book	2 think
	1 feeling	1 learning	2 preacher	1 thinking
1 catechism	1 fine	4 life	2 preaching	12 thought
50 Catholic	2 foolish	1 living	3 Presbyterian	1 thoughtful
2 ceremony	1 free	1 Lord	28 priest	1 training
1 China		1 Lutheran	3 profession	1 true
8 Christ	1 gentile		1 professor	1 trust
14 Christian	1 German	1 man	30 Protestant	6 truth
7 Christianity	31 God	1 men	1 pulpit	
1 Christlike	1 godly	1 mankind	2 pure	1 uncertain
161 church	46 good	1 many	1 puzzle	1 uncertainty
4 churches	10 goodness	1 mental		1 unknowable
1 churchman	2 gospel	1 Methodism	1 question	
1 civilize	1 government	7 Methodist		1 virtuous
1 clergyman	3 guide	15 minister	1 race	1 vow
4 comfort		1 modesty	1 rector	
1 commandments	3 happiness	2 Mohammed	2 religious	1 want
1 conduct	1 harmony	2 morals	3 reverence	1 wickedness
1 Congregational	1 health	1 mystic	2 right	1 wide
2 conscience	3 heathen		2 righteousness	1 woman
1 conversion	8 heaven	2 nationality		1 wonder
2 Creator	1 Hebrew	1 need	1 sacrament	1 wonderful
33 creed	2 helpful	1 no	4 sacred	1 work
1 custom	1 hereafter	5 none	1 sacredness	14 worship
	1 heresy	2 nothing	1 saintly	1 worshipping
1 deep	2 history	1 nun	1 saints	
11 denomination	4 holiness	1 nuns	2 salvation	1 Yankee
4 devotion	10 holy		1 scholastic	

74. WHISKEY

1 abomination	24 brandy	1 deviltry	2 evil	2 hot
50 alcohol	1 breath	1 Dewar's		1 hotels
1 ale	1 burn	1 disagreeable	1 fast	1 Hunter
1 amber	4 burning	1 discontent	4 fire	
1 appetizer		1 disgust	1 flask	1 indulge
1 apple	1 Carrie Nation	1 distillery	4 fluid	1 indulgence
1 awful	3 cider	1 distress	1 food	1 inebriety
	1 closet	1 dope	1 full	1 insanity
35 bad	1 color	1 dreadful		5 intemperance
1 barley	1 corn	222 drink	8 gin	13 intoxicant
2 barrel	4 curse	1 drinks	3 glass	2 intoxicants
1 bed		17 drinking	15 good	3 intoxicated
46 beer	1 dangerous	1 drinkable	1 grain	14 intoxicating
9 beverage	1 dark	1 drug		14 intoxication
1 biting	1 death	31 drunk	1 hard	
5 bitter	1 degradation	18 drunkard	1 headache	1 jag
10 booze	1 despised	3 drunkards	1 Hennessy's	
1 Boston	1 destruction	26 drunkenness	1 hops	1 Kentucky
29 bottle	1 devil		1 horror	1 knock

1 law	1 odor	1 ruin	5 spirit	1 terrible
12 liquid	1 old	1 ruination	23 spirits	1 thirst
1 liquids		23 rum	38 stimulant	1 thirsty
20 liquor	1 pint	9 rye	4 stimulants	1 tipsy
	1 place		1 stimulating	1 toddy
2 malt	1 pleasant	15 saloon	1 stimulation	1 toper
2 man	4 poison	1 saloons	1 stomach	2 trouble
4 medicine	1 poor	1 seasickness	2 straight	
1 misery	1 poorhouse	2 sick	6 strong	1 unhealthy
1 money	1 powerful	2 sickness	1 stupidity	1 unpleasantness
1 moonshine	2 prohibition	2 smell	1 suffering	
	1 punch	1 smuggle		1 warm
3 narcotic		1 sorrow	1 taste	9 water
2 nice	1 rarely	4 sour	4 temperance	16 wine
1 none	2 red		1 temptation	1 wrong

75. CHILD

5 adult	1 darling	1 hair	8 love	1 precocious
3 angel	2 daughter	2 happiness	2 loving	10 pretty
	1 dear	2 happy	4 lovely	1 pupil
7 babe	1 dearest	1 healthy		1 pure
193 baby	1 delight	1 helpless	1 male	1 purity
1 bad	1 disobedient	1 helplessness	1 mammal	
8 beautiful	1 dog	6 home	41 man	1 rattle
5 beauty	4 doll	2 hood	1 maternity	1 religious
8 being	4 dress	1 hospital	1 me	
2 birth	1 dresses	5 human	1 mite	5 school
2 blessing		1 humanity	55 mother	1 screaming
2 body	1 Eleanor		1 motherhood	1 sensea
1 born	1 Elizabeth	1 ill		1 simple
64 boy	1 embryonic	1 immature	1 naive	1 simplicity
3 boys	1 expectation	1 infancy	1 naughty	1 sister
1 burden		122 infant	1 necessary	52 small
	2 family	1 injury	1 nephew	1 smile
1 care	1 fat	16 innocence	1 nice	2 son
1 carriage	5 father	11 innocent	1 night-dress	1 spoiled
1 charm	3 female	1 inatinct	1 noise	1 study
1 childhood	1 frolicsome	2 interesting	2 nuisance	6 sweet
1 childish	2 fun			2 sweetness
1 Christ	1 fusy	1 joy	1 obedient	1 table
1 clothes	1 future	2 juvenile	6 offspring	1 tender
3 comfort				1 three
1 coming	45 girl	4 kid	6 parent	1 toys
1 companion	2 girls	1 kindergarten	1 parents	1 trouble
2 cradle	1 glass		3 people	
1 creep	7 good	2 labor	18 person	3 weak
1 crib	1 goose	2 lady	1 pet	15 woman
1 cries	1 Greta	2 large	14 play	
4 cry	1 growing	1 like	3 playing	30 young
1 cross	1 growth	11 little	3 playful	2 youngster
1 cunning		1 lonely	4 pleasure	29 youth
3 cute	1 habits	1 lovable	1 plump	1 youthful

76. BITTER

8 acid	5 beer	1 disappointment	1 grudge	1 limes
1 acrid	1 berry	2 dislike		1 liquor
1 agreeable	1 biting	10 distasteful	2 hatred	1 love
1 ale	1 bonaset	1 dregs	2 herb	
4 almond	1 burdock	2 drink	5 herbs	1 magen
3 almonds			1 hops	1 man
4 aloe	1 candy	2 enemy	3 horrid	1 mandrake
6 aloes	1 cascara		1 horseradiah	37 medicine
1 altogether	1 chastisement	1 feelings		1 Mirabar
2 alum	1 chickory	1 flag	1 icy	1 morphine
3 anger	1 chocolate	4 fruit	1 ill	
3 apple	1 cider		1 irritating	3 nasty
1 apples	6 cold	42 gall		1 nice
1 apricot	1 cross	2 good	8 lemon	1 none
1 astringent	1 cup	1 grape	1 lemonade	1 nux
		3 grapefruit	1 lessons	1 offensive
10 bad	1 deep	1 grass	1 life	1 olives
1 banana	10 disagreeable	2 grief		3 orange

1 peach	1 quince	1 spice	1 tears	1 unpleasantness
1 peel	23 quinine	3 strong	1 temper	1 unsweetened
9 pepper		1 strychnia	8 thoroughwort	1 unwholesome
2 persimmon	1 rank	4 strychnine	1 thought	
3 pickle	1 sadness	1 suffering	1 tonic	1 vegetables
1 pickles	2 salt	305 sweet	2 tonics	17 vinegar
1 pleasant	2 salts	1 sweeter	1 trouble	
4 plums	3 sharp		1 turnip	1 water
1 poison	8 sorrow	8 tart		1 weather
3 pucker	1 sound	6 taste	3 ugly	1 wine
1 puckering	22 sour	3 tasteless	1 unhealthy	1 word
	2 sourness	1 tasting	1 unpalatable	2 words
1 quassia		1 tea	19 unpleasant	2 wormwood
				1 wrong

77. HAMMER

2 action	5 driving	1 knife	1 plumber	4 striking
1 annoyance	1 door	35 knock	51 pound	1 stroke
6 anvil		6 knocker	12 pounding	
1 article	1 easy	5 knocking	1 pounds	3 tack
1 awl	1 effort			11 tacks
11 axe		2 large	1 rap	1 Thor
	3 finger	1 lost	1 repairs	1 thread
3 hang	2 force		1 revolver	6 throw
1 beating		3 mallet	1 road	1 throwing
2 blacksmith	1 geology	1 mark	1 rod	1 thumb
6 blow		1 maul	1 round	1 thump
2 board	5 handle	1 metal		1 toe
1 bruise	53 hard		9 saw	29 tongs
2 building	6 hatchet	185 nail	1 scissors	62 tool
	2 head	35 nails	1 shoemaker	3 tools
13 carpenter	13 heavy	2 nailing	1 shop	1 turf
1 carpentering	21 hit	36 noise	10 sledge	
10 chisel	1 horseshoe	1 nut	2 small	1 use
1 claps	1 hurt	1 nuts	9 sound	5 useful
1 claw	1 hurts		1 spade	1 utensil
2 club		2 one	1 stay	
1 concussion	8 implement		20 steel	2 weapon
1 convenience	38 instrument	1 pain	1 stone	2 weight
	45 iron	2 picture	1 strength	6 wood
17 drive		1 pictures	28 strike	8 work
1 drives	2 J.			2 working

78. THIRSTY

1 all	1 desiring	1 glass	1 nauseated	1 suffering
2 always	1 dipper	1 good		
1 animal	1 disagreeable		1 oranges	1 terrible
3 appetite	2 discomfort	1 hard		1 throat
	2 dog	1 haste	2 pain	1 tongue
1 bar	20 drink	2 heat	3 parched	
4 beer	23 drinking	1 horse	2 parching	1 uncomfortable
1 beverage	8 drought	2 hot	1 people	2 unpleasant
1 bird	218 dry	9 hunger	1 person	
1 boy	5 dryness	41 hungry		1 verv
1 brooks			12 quench	1 vichy
	1 emotion	1 labor	4 quenched	
1 cattle	1 empty	2 lack		2 walk
2 child	1 exhausted	1 lawn	1 refreshing	9 want
1 cold		7 lemonade		2 wanting
4 craving	1 famished	1 liquid	1 satiated	1 warm
1 cream	1 fatigue	4 longing	3 satisfied	341 water
2 cup	5 feeling		1 sensation	1 wench
	1 fluid	1 man	2 soda	3 wet
2 desert	1 food	2 mouth	3 spring	2 work
4 desire	1 fountain		1 stream	

79. CITY

1 Albany	1 Creal	3 house	1 mill	1 sights
1 beautiful	1 Creal Springs	52 houses	1 mountain	1 sin
9 big	11 crowd	1 immense	1 municipal	1 size
5 Boston	7 crowded	1 incorporated	1 municipality	1 slums
1 bridges	1 crowds	1 incorporation	1 nation	1 small
3 Brooklyn	1 density	2 industry	99 New York	1 smoke
6 building	1 dirt	1 inhabitant	12 noise	2 space
29 buildings	1 distance	12 inhabitants	6 noisy	1 Springfield
1 bulk		1 inhabited		26 state
1 Burlington	1 earth		1 park	1 stores
1 business	1 excitement	1 joy	1 pavement	3 street
4 busy			48 people	11 streets
2 bustle	1 fine	2 land	37 place	1 tale
	1 fun	62 large	1 pleasantness	1 ten thousand
6 capital		1 largeness	2 populated	2 theatre
3 cars	1 gaiety	2 life	19 population	1 theatres
1 charming	1 good	7 live	1 populous	2 towers
4 Chicago	1 government	1 loathing	6 Poughkeepsie	255 town
1 child	1 governor	2 location		1 towns
7 citizen	2 great	1 lots	2 republic	1 township
1 civilization	1 greatness		2 residence	1 traffic
1 Cleveland		1 machinery	1 resting	1 traveling
2 collection	3 habitation	1 majority	1 rich	1 tumult
5 community	1 heat	1 Manhattan	1 scene	2 turmoil
1 complexity	2 hill	2 manufacture	1 sea	
1 confusion	5 home	3 many	1 settlement	44 village
1 congregation	1 homes	2 men	1 shopping	1 wagons
2 corporation	1 hot	6 metropolis	1 shops	1 welcome
74 country				1 world

80. SQUARE

1 accurate	1 crackers	3 green	1 measurements	2 sharp
1 acre	3 crooked	1 grounds	1 metal	1 side
1 across	1 crowd		2 mile	6 sides
1 active	9 cube	1 hand	1 monument	1 sidewalk
1 airy	1 cubic	2 handkerchief		1 size
11 angle	1 cubical	1 Harlem	1 New York	1 sizing
6 angles	1 curse	2 Herald		6 small
4 angular	1 curve	1 heavy	2 object	1 smooth
1 arithmetic		3 honest	32 oblong	2 solid
1 association	1 deal	1 honesty	1 obtuse	1 space
	1 dealing	5 house	1 open	2 stand
1 bed	1 decoration	3 houses	5 oval	1 steel
1 best	2 desk			7 straight
1 big	1 Dewey	2 inch	5 paper	9 street
21 block	4 dice	1 inches	1 parallel	1 streets
4 board	1 die	1 instrument	1 parallelogram	1 sugar
4 book	2 door	1 iron	14 park	1 surface
36 box	1 Düsseldorf		1 pavements	1 surveyor
2 brick		1 just	2 people	
5 broad	1 earth	2 justice	2 perfect	42 table
2 building	1 ease	1 junction	1 picture	1 thoroughfare
1 business	6 equal	1 kindergarten	2 pillow	3 Times
	19 even	1 knob	4 place	13 tool
9 carpenter	1 evenness	2 land	1 plane	1 tree
1 carpet	1 exact	5 large	1 plot	4 trees
1 cars		1 Lawrence	1 proportion	11 triangle
2 center	3 fair	2 length	2 public	1 true
1 Chatham	4 field	10 level		
1 checkers	4 figure	2 lines	1 quadrangle	1 uneven
22 circle	1 file	1 little	15 rectangle	1 uniform
1 circular	4 flat	18 long	3 rectangular	4 Union
4 city	1 floor	1 lot	1 rhomboid	2 upright
1 Common	2 foot		5 right	
1 Commons	1 form		1 Rittenhouse	8 village
5 compass	10 four	12 Madison	1 road	1 walk
1 concert	1 frame	5 man	5 room	1 walks
1 Copley	1 furlong	1 mark	250 round	1 wall
7 corner		1 marks	9 rule	4 Washington
18 corners	5 garden	1 masonry	3 ruler	2 wide
2 cornered	10 geometry	2 mathematics	1 saddle	1 window
1 correct	1 Getty	5 meal	1 seat	5 wood
1 correctness	1 goods	2 measurement	6 shape	2 yard
1 cover	1 grass			

81. BUTTER

2 bad	5 dish	2 goat	101 milk	1 smooth
2 bill	1 dripping	14 good	1 molasses	65 soft
2 biscuit		76 grease	1 mush	2 softness
206 bread	34 eat	6 greasy		1 sour
1 breakfast	12 eatable	1 grocer	1 nourishment	1 spoon
1 butter	2 eatables		2 nut	3 spread
1 butterine	6 eating	1 healthful		1 square
	1 edible		9 oil	2 strong
41 cheese	2 egg	1 indifference	3 oily	1 substance
4 churn	11 eggs	1 ingredients	5 oleomargarine	4 sugar
1 color	1 emollient			1 supper
1 composition	1 excellent	3 jam	1 peaches	12 sweet
1 cooking		2 jelly	3 plate	
1 cottolene	1 farm		1 pleasant	2 table
1 country	1 farmer	1 kerosene	1 plenty	1 tallow
1 cup	21 fat	7 knife	1 pound	2 taste
29 cow	1 fatty		1 pure	2 tea
11 cows	1 fish	15 lard		1 thin
34 cream	1 flour	1 luxury	2 rancid	1 tub
	7 fly			1 use
4 dairy	63 food	1 meal	13 salt	
1 dairying	3 fresh	2 meat	3 salty	3 vegetable
2 diet	1 fudge	1 melt	1 salve	
2 dinner		2 melting	1 smear	80 yellow

82. DOCTOR

1 administer	5 disease	5 ill	1 murder	1 quack
2 aid	1 diseases	21 illness		
1 ailment	1 Divinity	2 inquisitive	1 N.	6 relief
1 apparatus	1 doctress	2 intelligent	1 N.	1 relieved
2 attendant	1 dog	1 interne	2 necessity	1 remedy
	1 driving	1 invalid	1 need	
1 bad	1 Dr. P.		1 needed	1 S.
1 bag	2 druggist	1 K.	1 needful	3 satchel
2 beard		1 K.	1 nice	2 science
2 better	2 education	1 killer	41 nurse	1 scientist
3 bill		1 kind	1 nurses	52 sick
2 bills	2 fakir			104 sickness
1 bottle	3 false	1 labor	1 O.	3 smart
1 brains	2 father	1 laboratory	1 office	1 student
1 brother	3 friend	1 laborer	1 old	1 suffering
1 butcher		1 lamp	1 one	1 supervisor
	1 G.	36 lawyer	1 operation	5 surgeon
1 C.	1 G.	1 learned		1 surgical
1 C.	1 gentleman	1 life	1 P.	1 syringe
2 care	17 good		2 pain	
2 carriage	1 goodness	1 M.	1 papa	1 tend
1 case	1 great	1 McC.	23 patient	1 treatment
1 chief	2 grip	1 McM.	1 patients	3 trouble
1 clergyman		1 magistrate	1 people	1 trust
1 clever	5 healer	1 male	3 person	
1 college	2 healing	68 man	1 pharmacist	2 useful
1 convenient	18 health	1 mean	1 physical	1 useless
9 cure	3 help	19 medical	213 physician	
	1 helper	140 medicine	1 pills	1 W.
1 D.	1 helpful	1 medicines	2 practitioner	1 W.
1 D.	1 helpfulness	1 merchant	6 priest	1 well
1 D.	1 home	7 minister	9 profession	1 wise
1 death	5 hospital	1 mister	3 professional	2 woman
6 dentist		1 money		1 work

83. LOUD

3 angry	3 disagreeable	2 laugh	1 power	2 sounds
1 audible	1 discontent	2 laughing	32 quiet	3 speak
	1 dislike	2 laughter	1 quietness	2 speech
1 band	3 drum	1 lofty		2 spoken
1 bawl		3 long		7 still
5 bell	3 ear	57 low	1 racket	1 stone
2 bells	12 easy		1 real	8 strong
2 birds	4 explosion	1 man	1 report	1 subway
38 boisterous		1 masculine	2 rough	1 sweet
1 boy	3 fast	1 megaphone	2 rude	
2 boys	1 forte	1 mellow		12 talk
1 bright		1 mild	1 S.	1 talking
	1 game	1 mouth	9 scream	9 talker
2 call	1 gong	7 music	2 sharp	9 thunder
1 called	1 graphophone		1 shock	1 tie
1 calliope	2 gun	205 noise	6 shout	1 tone
1 calm	1 guns	112 noisy	1 shouting	1 trolley
12 cannon			1 shriek	
1 check	2 hammer	1 objectionable	9 shrill	1 uncomfortable
1 child	2 hard	1 ocean	1 shrinking	5 unpleasant
1 children	3 harsh	1 organ	3 silent	
1 city	1 haughty	1 owl	1 sing	27 voice
1 clear	6 hear		1 singer	1 voices
2 course	1 heard	1 pain	1 singing	4 vulgar
2 color	4 heavy	1 painful	4 slow	
1 common	14 high	1 people	1 smart	2 whisper
1 confusion	1 hog	2 person	1 smooth	17 whistle
1 cornet	16 holler	1 phonograph	1 socks	1 wide
	4 horn	2 piano	165 soft	3 wind
1 deaf	1 impatient	1 piercing	1 softly	
1 deafening	2 knock	1 pistol	2 song	3 yell
1 din		1 pistols	25 sound	2 yelling

84. THIEF

1 absence	1 dishonor	1 laugh	1 pocketbook	212 steal
1 abductor	1 dislike	4 law	8 police	69 stealing
1 anger	1 distrustful	1 lawyer	12 policeman	8 steals
1 arrest	1 dirt	6 liar	1 poor	9 stole
	1 dog	1 lock	6 prison	9 stolen
14 bad	1 dumb	3 loss	1 prisons	2 stealer
1 badness		2 low	1 prisoner	1 stealth
1 bandit	1 enemy		2 punishment	2 stealthy
1 bank	1 evil	20 man	1 purse	
3 beggar		1 mask		5 take
1 being	2 fear	1 McClure's	1 ran	3 taking
1 betrayer	1 felon	4 mean	4 rascal	1 time
3 boy		1 meanness	1 reverses	2 tools
118 burglar	1 girl	1 men	1 revolver	1 tramp
2 burglary	1 glove	1 mercenary	8 rob	1 treasure
	2 gold	2 merchant	126 robber	1 troublesome
2 careful	1 good	2 minister	10 robbery	1 trust
2 catch		1 mischief	19 rogue	
4 caught	1 harsh	1 misdemeanor	1 roguish	3 ugly
1 caution	18 honest	1 mistake	1 run	1 undesirable
1 chief	4 honesty	16 money	2 running	1 unjust
1 clerk	4 house	5 murder		1 unreliable
1 clothing	1 household	3 murderer	1 scare	
4 court			1 schemer	1 vagrant
2 crime	1 ignorant	1 necessity	1 school	2 valuables
15 criminal	1 injustice	1 neighbor	4 scoundrel	2 vice
3 crook	1 interest	1 newspaper	1 shot	5 villain
1 cry	1 Irish	16 night	4 silver	1 virtue
2 culprit		1 none	1 silverware	
1 cute	11 jail	1 noted	1 sin	1 want
	7 jewelry		1 Sing Sing	3 watch
2 dangerous	3 jewels	1 object	1 sinner	1 waywardness
4 dark	1 judge		1 sly	4 wicked
1 deceit	1 jury	1 pencil	1 snake	3 wickedness
1 detective	2 justice	1 person	7 sneak	1 window
1 devil		2 pickpocket	3 sneaking	1 woman
11 dishonest	1 killed	1 play	1 sneaky	1 wretched
2 dishonesty	1 kleptomaniac	1 pocket	1 spoils	3 wrong

85. LION

4 Africa	5 cub	1 hearted	27 mouse	1 story
1 Androcles	2 cubs	1 holler	1 mule	30 strength
1 anger		1 horse		15 strong
2 angry	5 danger	1 howl	1 N.	1 Sultan
326 animal	6 dangerous	1 huge	1 noble	
3 animals	1 death	1 hungry	1 noise	4 tame
	13 den	3 hunter		1 tamer
17 bear	3 desert	4 hunting	1 panther	1 tail
62 beast	1 devours	1 hyena	2 park	1 teeth
1 beautiful	1 disturber		1 paw	1 terrible
1 beauty	1 dog	1 interested	1 picture	192 tiger
2 big			5 power	2 tigers
1 bird	1 eat	1 jealous	1 powerful	
1 bite	1 eats	5 jungle	1 prey	7 ugly
1 blood	3 elephant	1 jungles		
1 bolsterous	1 enraged		1 rage	5 vicious
2 bold		16 king	1 raging	
1 Bostock's	3 fear		1 revenge	1 walks
4 brave	16 ferocious	1 L.	46 roar	2 wicked
1 bravery	1 ferocity	6 lamb	3 roars	12 wild
1 Bronx	26 fierce	3 large	6 roaring	1 wildness
	1 fierceness	10 lioness	8 Roosevelt	2 wilderness
14 cage	6 forest	1 lionized	1 rough	1 wilds
1 camel	1 fox	1 lookout		10 wolf
6 cat	1 fright		1 savage	2 woods
1 cave	1 frightened	1 majestic	1 sea	1 wool
1 Christian		3 majesty	1 shaggy	1 wrath
2 circus	1 giraffe	13 mane	1 sharp	
2 claws	2 great	5 menagerie	1 sheep	1 yellow
1 cow	1 growl	1 nice	1 small	
1 crouching		1 mighty	1 stealth	5 zoo
2 cruel	3 hair	1 monkey	1 stealthy	1 zoology

86. JOY

1 action	2 delighted	7 great	1 merriment	1 sensation
1 amuse	2 delightful	18 grief	1 merry	1 shouting
3 amusement	1 despair		7 mirth	2 show
1 anger		1 hands	1 money	1 sing
1 angry	1 ecstasy	215 happiness	1 motherhood	1 singing
1 anticipation	3 elated	71 happy	2 much	2 smile
1 arrival	1 emotion	1 harmony	5 music	1 smiling
4 automobile	1 engaged	1 health		3 song
	2 enjoyment	1 heard	1 news	125 sorrow
1 ball	3 excitement	3 heart	2 nice	1 sorry
1 bird	2 expression	2 heaven	1 noise	1 state
1 birth	1 extreme	1 holiday		1 suffering
1 birthday	1 exuberance	6 home	1 outing	1 summer
1 bitterness		4 hope		1 sunlight
1 bless	1 fair		1 pain	6 surprise
1 blessing	1 family	1 inexpressible	1 passing	4 sweet
10 bliss	1 feel		23 peace	1 sweetness
1 boy	5 feeling	1 joking	1 picnic	
1 bright	1 felt	1 jubilant	1 picnics	2 time
1 brightness	1 festivity		8 pleasant	1 triumph
1 buoyant	2 fine	1 lady	3 pleased	3 trouble
	1 food	7 laugh	121 pleasure	
1 cheer	1 forever	4 laughing	1 pride	1 unalloyed
2 cheerful	1 friends	15 laughter		1 unattainable
3 cheerfulness	1 fullness	1 leap	1 quality	2 unhappiness
2 child	6 fun	1 letters		1 unhappy
1 children		3 life	4 rapture	
2 Christmas	1 gaiety	2 light	2 rejoice	1 vacation
1 comes	1 gay	1 like	1 rejoicing	
11 comfort	1 game	2 line	2 relief	1 water
1 comfortable	1 gift	1 lonely	7 ride	1 wedding
1 company	2 girl	1 lots	2 riding	1 wetness
1 complete	1 girls	6 love	1 rider	1 wish
1 concert	27 glad	2 loving		1 wonderful
1 contentment	44 gladness	1 lovely	1 sad	2 work
	3 glee		15 sadness	1 wrath
3 dance	1 godliness	1 man	2 sailing	
5 dancing	7 good	2 marriage	1 Saturday	1 youth
6 delight	1 grand	2 meeting	1 seldom	

87. BED

1 animal	1 covering	2 house	17 pillow	3 sleepiness
1 asleep	1 desired	9 iron	7 pillows	7 sleepy
1 baby	1 dormitory	1 joy	1 pleasure	3 slumber
3 bedding	1 down	1 large	3 post	7 sofa
4 bedstead	1 dreamland	2 large	1 quilts	31 soft
4 blanket	1 ease	8 lay	1 recline	5 spread
3 blankets	1 easiness	1 laziness	1 recuperation	1 spring
1 boat	2 easy	21 lie	1 refreshing	1 springs
1 bowl	1 fatigue	6 lounge	9 repose	1 square
3 brass	3 feathers	2 low	1 respite	1 stove
2 bug	1 flannels	8 lying	132 rest	1 structure
11 chair	1 floor	1 make	5 resting	2 table
2 clean	2 folding	1 marriage	1 restful	1 tick
1 cleanliness	1 frame	21 mattress	1 robe	1 time
12 clothes	26 furniture	1 narrow	16 room	7 tired
2 clothing	1 go	1 negro	1 seat	1 twilight
35 comfort	7 good	11 night	6 sheet	1 Vassar
1 comforts	2 hammock	1 object	7 sheets	1 want
12 comfortable	5 hard	1 pan	1 shoes	1 warm
11 cot	1 head	3 patient	2 sick	1 weariness
26 couch	2 home	1 peace	5 sickness	2 white
1 counterpane			345 sleep	1 whiteness
4 cover			41 sleeping	1 wide
4 covers				4 wood

88. HEAVY

1 air	1 cloudy	1 heart	1 oppression	17 stone
1 animal	4 coal	2 hearted	1 oppressive	2 stones
1 anvil	1 coarse	1 heft	1 package	2 stout
1 article	1 coat	1 help	1 pail	3 stove
1 automobile	1 comfort	2 horse	1 person	1 strain
1 avoidupois	1 cumbersome	1 house	1 piano	4 strength
1 baby	1 dark	29 iron	2 ponderous	3 strong
1 bad	1 difficult	2 irons	1 pound	1 study
1 bat	1 dirt	1 labor	1 pounds	1 suit
2 bed	1 disappointment	2 laden	2 pressure	5 table
3 big	1 discomfort	18 large	1 quicksilver	3 thick
1 body	1 dope	60 lead	2 quiet	1 things
3 books	1 drag	7 lift	2 rock	1 thoughtful
1 boulders	1 drill	1 lifting	1 rough	21 tired
1 box	1 drowsiness	273 light	2 safe	2 tiresome
1 boxes	10 drowsy	1 lightness	1 sand	4 ton
1 boy	3 dull	57 load	1 satchel	1 tough
1 bread	1 effort	1 loadsome	1 scales	3 trunk
1 brick	3 elephant	1 loud	1 sharp	1 uncomfortable
1 building	1 F.	1 machine	1 ship	1 underwear
1 bullet	1 fall	4 man	1 short	1 very
4 bundle	1 feel	1 marble	1 sickness	1 weak
12 burden	1 firmness	1 mountain	3 sleep	3 weariness
3 burdensome	1 full	1 much	1 sleeping	3 weary
1 cake	3 gold	1 mud	1 slothful	1 weather
1 cannon	1 gorgeous	1 muscle	1 slumber	1 weigh
1 carpet	1 grief	1 myself	5 soft	1 weighing
2 carry	2 grip	1 no	1 soggy	17 weight
1 carrying	3 hammer	1 obliging	3 solid	1 weighted
1 cement	38 hard	1 opposing	1 sound	22 weighty
1 chair	2 head		1 steel	4 wood
1 change				2 work
1 cloth				
1 clothes				

89. TOBACCO

1 amber	1 elevate	1 Indian	60 pipe	7 strong
1 anger	1 enjoyed	3 injurious	3 pipes	1 substance
10 bad	1 enjoyment	1 intoxicate	38 plant	1 suffocation
1 bite	1 execrable		1 plants	2 sugar
4 bitter	1 exhilaration	7 juice	3 pleasant	2 sweet
1 Bob	1 evil	17 leaf	2 pleasure	1 tasty
1 breath	1 field	2 leaves	6 poison	1 tobacco
7 brown	1 fields	1 light	2 pouch	
	4 filth	1 liquor	1 plug	1 unclean
28 chew	1 filthiness	1 lungs	1 refrain	2 unnecessary
13 chewing	1 filthy	2 luxury	1 ruin	2 unpleasant
19 cigar	1 food			1 unwholesome
17 cigars		3 man	1 scent	2 use
12 cigarette	1 garden	1 men	1 sensation	1 used
6 cigarettes	5 good		1 sin	1 useful
2 comfort	3 green	10 narcotic	5 smell	2 useless
1 curse	1 grower	2 nasty	30 smoke	3 vegetable
	1 growing	1 nausea	10 smoking	1 vice
1 death		18 nicotine	1 smoker	2 Virginia
1 decay	12 habit	1 none	15 snuff	44 weed
1 deviltry	1 habits	1 not	1 solace	1 weeds
6 dirty	1 hard	1 nuisance	4 spit	1 whiff
3 disagreeable	3 herb		1 stalk	1 whiskey
1 disgust	1 herbs	1 obnoxious	1 stars	1 wickedness
1 disgusting	1 horrid	3 odor	2 stimulant	
3 drug	1 horrors	1 odorous	1 stimulants	1 yellow
1 Durham		4 opium		

90. BABY

1 animal	2 cross	1 happiness	1 milk	4 sleep
	3 cries	1 happy	41 mother	1 slight
5 beautiful	37 cry	1 harmless		42 small
2 beauty	29 crying	1 helpless	1 name	1 smallest
1 beginning	3 cunning	4 helplessness	5 nice	1 smiling
3 being	8 cute	4 home	6 noise	3 soft
1 bib	1 cuteness	3 human	1 noisy	2 softness
1 big		168 infant	3 nuisance	2 squalls
1 birth	4 darling	1 infinitesimal	7 nurse	1 squeal
1 blessing	1 daughter	10 innocence	2 offspring	1 squealing
1 blue	1 delicate	4 innocent		1 stout
2 body	1 dirty		1 pacifier	1 sunshine
1 bonnet	1 doll	7 joy	1 paper	23 sweet
2 born	6 dress	1 jump	2 person	7 sweetness
6 bottle		4 kid	2 pink	1 syrup
32 boy	1 embryonic		1 play	1 talk
1 bread	1 eyes	1 lamb	1 pleasant	1 talks
1 buggy	1 fair	1 laugh	3 pleasure	1 tiny
1 bundle	2 family	1 laughing	1 population	5 trouble
	5 fat	1 Lawrence	1 powder	1 two
1 cap	1 father	2 life	7 pretty	1 wagon
3 care	1 feet	1 light		1 walking
28 carriage	1 female	12 little	4 rattle	1 weak
2 cart	1 flesh	1 Lorenzo	1 rocker	1 weakness
230 child	1 food	9 love	1 round	1 wee
3 children	1 friend	1 loveliness	2 Ruth	1 white
1 childhood	1 future	1 lovely		2 wife
1 chubby		2 mama	1 sex	5 woman
4 clothes	26 girl	4 man	1 sick	
3 comfort	1 good	1 mankind	1 sickness	2 vell
22 cradle	1 goodness	1 Mary	1 simple	12 young
1 creation	1 growth		1 simplicity	1 youngster
1 crib			2 sister	4 youth
1 crooning				

91. MOON

1 astronomer	7 body	1 circular	1 delicate	1 fair
1 astronomy	52 bright	3 clear	1 delightful	2 fire
1 atmosphere	7 brightness	2 clouds	1 dim	1 firmament
	1 brilliant	4 cold	4 distance	10 full
2 ball		1 coldness	1 dreaming	
2 beam	1 calm	8 crescent	5 earth	1 girl
1 beam	1 change	1 cute	3 eclipse	1 globe
7 beautiful	4 cheese	1 equator	1 glowing	1 grand
6 beauty	1 circle	2 dark	6 evening	

1 great	3 lunar	23 planet	26 shine	1 steamer
1 guard	8 man	1 planets	4 shines	1 stone
3 half	3 moonlight	1 pleasant	12 shining	2 struck
2 heaven	1 mountain	1 quiet	12 shiny	¹²⁰ sun
3 heavens	1 mystery	1 reflection	4 silver	1 sweet
4 high	1 necessary	1 rise	6 silvery	1 turkey
1 illumination	3 new	1 rises	1 size	1 valuable
1 lady	66 night	1 rising	73 sky	1 wan
1 lake	1 object	33 round	1 solar	2 water
9 large	1 ocean	4 satellite	1 sound	3 white
²³¹ light	1 one	2 sea	1 splendid	1 wish
3 love	1 orbit	1 see	2 spoon	11 yellow
1 loveliness	2 pale	1 seeing	1 spooning	
2 lovely		1 sentimental	32 star	
			⁹³ stars	
			1 starlight	

92. SCISSORS

1 apart	3 dressmaking	1 instruments	1 nippers	1 skirt
4 article	5 dull	66 knife	6 paper	1 spool
2 barber	1 edge	6 knives	1 point	²³ steel
1 blade	1 fate	1 lever	1 pointed	1 string
1 blades	1 firecrackers	1 linen	1 razor	2 tailor
1 blunt	1 flowers	1 lost	1 ruching	3 thimble
35 cloth	2 garments	2 machine	1 Sarah	4 thread
1 clothing	1 glistening	1 material	1 screw	1 tongs
1 cord	5 goods	1 metal	1 severing	¹⁰ tool
1 crooked	1 grating	1 millinery	2 sew	1 tools
2 crossed	7 grind	1 mother	10 sewing	1 trousers
³⁴⁷ cut	1 handle	1 nails	¹²⁰ sharp	1 useful
¹¹⁴ cutting	1 handy	1 necessity	5 sharpness	1 usefulness
1 cutlery	6 implement	4 needle	1 sharpen	1 utensil
1 dress	³⁶ instrument	4 needles	40 shears	1 weapon
2 dressmaker		2 shut	1 silver	1 woman
		1 nickle		2 work

93. QUIET

1 action	3 demure	2 life	3 pleasure	3 solemn
2 alone	1 disposition	1 like	2 solitude	2 soiling
1 always	1 docile	1 loneliness	1 quick	3 soothing
1 asleep	1 dreary	3 lonely	2 quite	4 sound
2 baby	1 dull	2 lonesome	1 rabbits	2 soundless
1 beautiful	1 dumb	1 looks	1 refined	1 speechless
1 beauty	8 ease	1 lovely	1 relief	1 state
1 bed	1 easiness	⁴⁸ loud	6 repose	2 steady
2 behave	⁴⁹ easy	1 low	1 reserved	¹³⁰ still
3 boisterous	5 evening	1 man	⁶⁸ rest	¹⁶ stillness
1 bore	1 family	1 melancholy	4 resting	2 study
1 boy	1 feeling	1 mind	¹⁹ restful	1 stupid
1 breeze	1 genteel	1 Miss K.	2 restless	1 subdued
⁷ brook	3 gentle	1 moon	6 room	1 summer
1 butterfly	1 gentleman	1 mountains	1 rough	1 Sunday
20 calm	2 girl	1 music	1 sad	2 sweet
1 cattle	7 good	1 myself	1 sea	2 talk
6 child	1 green	1 nature	1 serene	1 time
1 children	1 happy	2 nice	1 sheep	1 times
4 church	2 harmless	38 night	1 sickness	1 timid
1 color	1 harsh	50 noise	13 silence	1 tomb
2 comfort	1 heaven	16 noiseless	15 silent	1 tranquil
1 comfortable	6 home	¹¹³ noisy	24 sleep	1 tree
1 composed	1 hour	1 nook	3 sleeping	1 twilight
2 contented	3 house	1 park	1 sleepy	1 village
²¹ country	2 hospital	26 peace	8 slow	1 violent
1 Creal	1 humble	2 peaceable	1 slowness	1 voice
1 cricket	1 joy	52 peaceful	1 slumber	1 walk
3 cross	1 landscape	4 peacefulness	1 slumbers	1 water
3 dark	1 laughing	2 people	1 smart	1 well
1 darkness	1 library	1 person	1 smooth	1 Wilton
3 day		4 place	1 sober	1 wish
2 death		4 pleasant	10 soft	1 wood
1 degree			1 softly	10 woods
			1 softness	

94. GREEN

8 apple	1 definite	1 grew	1 ocean	1 sky
2 beautiful	6 dress	1 grief	1 olive	1 slow
1 bird	2 earth	1 ground	2 orange	1 small
13 black	3 envy	1 hat	3 paint	1 soft
1 bloomy	1 Erin	1 hill	2 paper	2 sour
2 blotter	4 eyes	2 horn	1 peaceful	1 spinach
46 blue	1 farmer	1 horrid	2 peas	9 spring
1 book	1 favorite	1 hue	11 pink	1 stain
5 bright	12 field	6 Ireland	6 plant	1 summer
8 brown	10 fields	14 Irish	1 plants	1 tea
1 butterfly	3 flag	1 jealousy	2 pleasant	10 tree
1 cabbage	4 flower	1 landscape	1 pleasing	29 trees
1 calm	2 flowers	1 laurel	4 pretty	1 unripe
1 carpet	2 foliage	5 lawn	6 purple	1 vegetable
1 cheese	1 foolishness	8 leaf	2 quiet	1 vegetables
3 cloth	3 fresh	13 leaves	42 red	3 verdant
200 color	1 fruit	4 light	6 restful	1 verdure
1 colors	1 gay	1 meadow	2 ribbon	1 warning
1 comfort	1 glasses	1 meadows	2 ripe	1 wearing
1 corn	1 gold	2 mountain	2 sea	31 white
1 country	1 grand	1 name	4 shade	1 wood
1 covetous	1 grapes	4 nature	2 shamrock	2 woods
2 cucumber	284 grass		1 shutters	54 yellow
1 curtain	5 gray		1 sight	1 young

95. SALT

1 acid	1 dish	1 Lake	2 potato	18 sour
3 air	1 drink	1 life	4 potatoes	5 spice
1 apple	2 dry	1 lot	1 powder	1 spill
2 apples			1 preparation	1 stickiness
1 article	5 earth	4 mackerel	2 preservation	55 sugar
1 barrel	17 eat	1 marsh	1 preservatives	1 sustenance
1 barren	7 eatable	18 meat	1 preserving	27 sweet
1 bath	8 eating	1 meats	1 quotation	1 Syracuse
1 beef	2 eggs	1 medicinal	1 refreshing	14 table
40 bitter	1 epileptics	1 melt	4 relish	2 tart
1 bowl	1 finish	2 mine	7 rock	57 taste
1 box	4 fish	3 mines	1 rocks	1 tasting
2 bread	21 flavor	37 mineral	1 saline	2 tasteful
2 brine	3 flavoring	1 mustard	1 saltpetre	6 tasty
1 bromide	46 food	1 NaCl	3 salty	1 tasteless
7 butter	1 France	5 necessary	1 sandwiches	1 temper
2 celery	11 fresh	3 necessity	1 Saratoga	4 thirst
9 cellar	1 glass	1 needed	1 saving	2 thirsty
2 chemical	9 good	1 needful	10 savor	1 trees
1 codfish		1 nice	1 savory	7 use
2 condiment	1 halite	36 ocean	18 sea	2 useful
1 cook	1 ham	1 pantry	12 season	1 uses
2 cooking	4 hard	1 paper	31 seasoning	1 using
1 cows	1 horrid	1 pasture	2 shake	5 vegetable
1 cream		142 pepper	4 shaker	1 vegetables
1 deposit	1 ice-cream	1 petre	8 sharp	1 victuals
1 digestible	1 ingredient	1 physis	1 sheep	1 vinegar
3 dinner	1 Kenilworth	1 pickles	1 snapping	34 water
1 dirt	1 kitchen	5 pork	1 sodium	2 wet
1 disagreeable		1 potassium	2 soup	26 white

96. STREET

1 air	3 boulevard	1 byway	1 confusion	1 Devon
18 alley	1 Bowery	10 car	1 congestion	1 direct
6 asphalt	2 boy	8 cars	2 corner	1 directions
1 automobiles	1 brick	1 carriage	1 country	4 dirt
63 avenue	2 broad	52 city	2 crooked	5 dirty
1 avenues	6 Broadway	1 Clarkson	1 cross	1 distance
1 better	1 Brooklyn	7 clean	3 crowd	1 drive
1 bitter	1 building	1 cleaner	1 crowded	1 driving
12 block	4 busy	1 colors	1 dark	2 driveway
				1 dry

4 dust	2 horses	1 nice	1 racket	26 town
5 dusty	1 hot	8 noise	1 residence	1 tracks
1 dwellings	11 house	5 noisy	91 road	7 traffic
	21 houses	12 number	4 roads	3 travel
1 earth	1 hustle	1 numbers	2 roadway	1 tree
1 Eighty-sixth				1 trees
1 Eleventh	3 land	1 One-fifteenth	1 see	2 trolley
1 Elm	21 lane	1 One-sixteenth	1 shopping	1 turmoil
1 even	1 large	1 opening	3 short	1 vehicles
	1 length		26 sidewalk	9 village
1 fertile	1 level	1 passageway	2 sidewalks	
1 Fifteenth	1 light	2 passway	1 Sixty-seventh	3 wagon
1 fine	2 live	12 path	2 Sixty-third	2 wagons
2 flags	2 location	2 pathway	2 smooth	78 walk
1 Forty-third	1 lonely	1 pave	1 space	23 walking
	29 long	13 paved	4 square	2 walks
1 garden	5 Main	25 pavement	8 stone	1 Wall
1 going	1 Market	1 paving	8 stones	1 Washington
1 gravel	1 Maxfield	1 pebble	17 straight	14 way
2 gutter	1 motion	1 Pecan	1 sun	1 wet
	1 mud	22 people	1 sweep	1 white
1 hard	1 musician	16 place	1 tenements	35 wide
1 heat		2 pleasant	1 terrace	1 width
1 Hester	2 name	1 pleasure	23 thoroughfare	1 Woodhull
7 highway	21 narrow	2 pretty		
1 home	3 New York			

97. KING

1 Albert	1 dog	8 head	8 majesty	354 queen
1 all	1 duke	1 helmet	2 male	
3 Alphonso		2 Henry	43 man	1 regal
1 antiquity	30 Edward	2 high	3 master	1 regent
1 Arthur	11 emperor	1 Holland	1 mean	8 reign
4 authority	3 empire	1 honorable	1 Midas	1 rich
	20 England	1 horrible	49 monarch	1 Richard
1 bad	1 ermine		4 monarchy	2 royal
1 boss		1 imperial		5 royalty
	1 family	1 inheritance	1 nation	10 rule
1 card	1 farce	1 Italy	1 nobility	4 rules
1 cards	1 first		3 noble	102 ruler
2 chess	1 fool	1 John	2 nobleman	
1 chief	1 foreign	1 judgment	1 none	1 Saxony
3 command	1 friend			2 sceptre
1 commanding	1 garment	2 Kaiser	1 officer	1 slave
9 commander	2 George	1 king	1 old	1 somebody
2 conqueror	1 glory	5 kingdom		8 sovereign
13 country	1 good	1 large	2 palace	1 Spain
1 court	1 govern	1 law	6 person	1 stories
1 courtier	4 government	2 leader	1 picture	2 subject
63 crown	6 governor	1 lion	2 pompous	1 supreme
2 crowned	2 great	1 lord	18 power	
	1 greatness	1 Louis XVI.	4 powerful	21 throne
1 daughter	1 Hamlet	1 loyal	4 president	1 title
1 diamonds	1 happy	1 majestic	1 princess	1 town
1 dignity			1 Prussia	1 tyrant
1 dislike				

98. CHEESE

2 American	1 corn	1 Dutch	5 green	1 lump
	9 cow		1 grocer	2 lunch
1 bacteria	3 cows	1 eagle	1 grocery	
2 bad	1 cracker	67 eat		1 macaroni
2 beer	30 crackers	29 eating	1 ham	1 maggot
1 biscuit	30 cream	1 eaten	2 hard	2 maggots
6 bitter	1 creamery	19 eatable	1 head	1 meat
2 box	1 crust	3 eatables	1 heap	25 mice
56 bread	9 curd	1 edible	2 hole	1 microbes
1 brick	3 curds	2 eggs	2 holes	1 mild
130 butter	2 cut		2 holey	106 milk
2 buttermilk	1 cutter	1 factory	1 hoops	1 milky
		2 fat	1 hunger	1 mixture
8 cake	4 dairy	1 feast	1 hungry	2 moon
2 Camembert	2 delicatessen	1 fine		1 mould
1 casein	1 derby	1 fondness	1 indigestion	1 mouldy
1 chalk	2 diet	91 food	1 jam	13 mouse
1 cheesecloth	1 digestible	2 fresh	1 kind	2 mustard
1 churn	1 digestion	1 fromage de	4 knife	1 nice
4 cloth	2 dinner	Brie		1 nourishment
1 cold	1 dish		15 Limburger	1 nutrition
4 color	4 dislike	15 good		

9 odor	4 rarebit	1 salt	2 solid	1 tasty
1 odorous	8 rat	8 sandwich	5 sour	1 thin
	7 rats	2 sandwiches	1 strengthening	
1 pickles	1 red	1 sauce	12 strong	5 vegetable
6 pie	1 resentment	1 scent	1 sugar	1 vegetables
1 plain	1 rich	2 Switzer	5 supper	
1 plate	4 Roquefort	3 sharp	2 sweet	1 wafers
1 poor	1 rough	1 skippers	16 Swiss	3 white
1 poultry	2 round	33 smell	1 Switzerland	1 worms
1 price		1 smella		
2 product	1 sage	7 soft	8 taste	32 yellow

99. BLOSSOM

50 apple	1 clover	39 fruit	2 odor	1 seeds
4 apples	5 color		2 orange	1 shrubberies
1 art	1 colors	2 garden	2 orchard	1 small
	1 country	1 gin		2 smell
10 beautiful		1 girl	1 pansies	1 soft
9 beauty	1 dainty	1 green	1 pansy	23 spring
1 beginning	2 daisy	2 grow	1 peacefulness	1 sprout
1 berries	1 delicate	2 growth	4 peach	1 stem
28 bloom			1 petal	4 summer
7 blooming	1 eat	1 handsome	1 petals	1 sun
1 blow	2 fair	1 happiness	1 picking	15 sweet
1 book	1 falling	1 hepatica	7 pink	1 T.
4 brigh.	1 falls		13 plant	40 tree
23 bud	3 field	3 leaf	1 pleasure	17 trees
3 buds	1 fields	1 leaves	1 plum	
1 bursting	47 flower	2 lilacs	1 pour	1 vine
1 bush	23 flowers	1 lily	15 pretty	3 violet
2 bushes	1 foliage			
1 buttercup	2 forth	1 magnificent	3 red	1 weeds
5 cherries	6 fragrance	2 May	17 rose	8 white
4 cherry	4 fragrant	1 mimosa	4 roses	2 yellow
1 clematis	1 frail	1 nice	1 scent	1 youth

100. AFRAID

1 accidents	5 cowardice	2 ghosts	4 nervousness	1 soldier
1 action	3 cowardly	1 girl	3 never	1 somebody
2 alarm	1 crowd	4 go	12 night	1 sore
2 always	1 crying	1 goblins	3 no	2 sorrow
3 anger		1 God	1 nobody	1 sorry
2 angry	15 danger	1 guilty	2 noise	1 spirit
2 animal	2 dangerous		1 noisy	1 spiritual
2 animals	1 dare	1 happy	1 not	1 startled
1 anxiety	114 dark	2 harm	5 nothing	1 startling
2 automobile	16 darkness	1 heart		1 star
1 awful	2 death	1 heroism	1 obsession	1 stillness
	1 deep	1 hide	1 opposition	1 strong
1 backwardness	1 depressed	1 home		1 suddenness
2 bad	1 desire	1 hope	1 palpitation	1 suffering
2 bashful	1 dislike	1 horse	1 patient	1 sure
1 battle	1 do	1 hurt	1 patients	
1 bears	1 dog		1 plucky	1 tempted
1 blow	1 dogs	1 insect	1 police	1 terrified
2 bold	1 don't	1 joy		9 terror
1 boy	1 doubt	1 joyful	1 quiet	3 thief
18 brave	7 dread		1 rat	1 thought
1 bravery	1 dreading	1 licked	1 rats	1 threaten
1 brother	1 dreadful	1 lightning	1 retreat	1 thunder
3 burglar	1 dream	3 lion	1 riot	55 timid
2 burglars		1 loneliness	2 robbers	2 timidity
	2 emotion	8 lonely	1 rocks	1 timorous
1 careful	2 faith	5 lonesome	4 run	1 to-night
2 cat	107 fear	1 loss	1 running	2 tremble
1 cheerfulness	8 fearful			1 trouble
8 child	8 fearless	3 man	1 scare	1 trust
1 children	2 feeling	1 manner	106 scared	1 unable
1 cold	1 fierce	1 memory	1 scary	1 uncertain
1 comfort	1 forward	1 mild	1 scream	5 uneasy
1 comforted	9 fright	1 Miss K.	1 sensitive	1 unhappiness
1 company	2 frightened	1 mice	1 shiver	1 unknown
1 confidence	48 frightened	2 mouse	2 shrinking	1 unprotected
1 conscience	1 frightful		1 shudder	
11 courage	1 frog	1 need	2 shy	1 woman
5 courageous		2 nerve	1 sickness	1 women
1 cow	1 gallant	1 nerves	1 sleep	1 worried
1 cows	4 ghost	55 nervous		3 worry
53 coward				

MILITARY PSYCHIATRY.*

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The psychiatric picture differs in different races, different social classes, and in different environment. Thus, insanity in the Malay does not present the same picture that it does in the Caucasian race. The tropical Malay has very little education and his life is monotonous, with none of the stimulus of varying seasons, with few bodily wants, and very little of the striving for existence. An inspection of seventy-five criminal insane in Manila, P. I., in 1905, showed the writer no excited cases. Some were apparently confused and many appeared demented. They were destructive and it was especially difficult to keep them clothed. They showed a larger percentage of stigmata of degeneration than the average Philippino. Dr. P. C. J. Van Brero,¹ in charge of an asylum at Buitenzorg, Java, says: "Their delusions are more elementary and often so little developed that in Europeans we should call them demented. I have never seen any obsessions and their expansive ideas are childish. While they are dangerous when excited, a larger number of natives and Chinese can be treated in a quiet ward than would be true among the same number of Europeans." Of 230 patients, 37 were discharged recovered, 20 improved, 60 died, and 113 were remaining. Dr. M. Urstein,² after studying mental cases in Central Asia, says: "The richness and intensity of symptoms were less . . . Usually but one symptom was prominent . . . Rarely was there a flight of ideas, although word pressure was evident . . . The depressions showed much less affect disturbance." The Japanese are also said to require less restraint and to be more quiet. Steida³ found in Japan only one isolation cell occupied, and that by a tubercular patient. Several centuries ago the Japanese people established

* Read at the sixty-sixth annual meeting of the American Medico-Psychological Association, Washington, D. C., May 3-6, 1910.

of their own accord, at Iwakura, near Kioto, an open-air method of treatment like that at Gheel. So little were they disturbed by the insane that fifty years ago there were no insane asylums in Japan, and now we find only private asylums and one government asylum in Tokio.

This difference extends even farther, for it is well known that different social classes give different pictures of mental disease. The elaboration and the definiteness of the delusions vary with the education and life of the people in the same mental disease. Even certain characteristics seem stamped on certain localities. Several authors have mentioned the unusual amount of simulation and the theatrical qualities of mental disease among Neapolitans, whose theatrical tendencies in ordinary life are so well known. Great catastrophies, such as the Messina^{*} earthquake and the Carrieres^{*} (France) explosion, have given rise to reports of psychoses of a depressed character with delusions colored by these experiences.

Consequently, it seems natural that we should expect to find in military organizations, composed of selected men, of the active period of life, for a special purpose and living under unusual conditions, certain special problems and manifestations. Our own country is nearly the last to take up this serious problem. As far back as 1786, Goercke,^{*} in Germany, invited the attention of the government to the special problems of the mentally diseased in the army. But it was not until nearly a century later, in 1870, that Koester succeeded in awakening practical interest. Meanwhile, Russia, because of overcrowding of civil asylums and other unsatisfactory conditions, determined to build an asylum for military insane at St. Petersburg, in connection with Nicolajewschén Military Hospital. This proved so satisfactory that in 1894 they opened a new building of one hundred beds, erected at a cost of \$500,000. The Medical Chirurgical Military Academy in St. Petersburg has also erected a similar hospital, where Prof. Bechterew has done his famous work. Besides, we find they have erected at least ten other military psychiatric hospitals in different parts of the empire. These all have to do with acute recoverable cases and chronic cases are provided for elsewhere. It is also to Russia's credit that in the recent Russo-Japanese^{*} war she gave

the first practical demonstration of the necessity and importance of a complete psychiatric service from the firing line to the home hospitals. A specially-constructed ambulance with a surgeon and attendants collected the cases from the firing line and delivered them to one of two psychiatric dispensaries near the scene of battle. From this point they were assembled at a central psychiatric hospital at Harbin and later transferred to Russia. Way-station psychiatric hospitals were established to meet the necessities of the home journey of thirty days on the train.

Austria has followed the example of Russia in establishing at Tyrnau * a special psychiatric hospital under purely military control. In this hospital they have abolished restraint, with the result that destruction of property has decreased 28 per cent. They employ in agricultural work 40 per cent of the patients, and the income in 1904 from this source was 18,000 kronen (\$3600.00).

In Germany, all doubtful cases (*i. e.*, cases where the diagnosis of mental disease is not clear) are kept in the psychiatric departments of the military hospitals until the diagnosis is established. All cases in which the existence of mental disease is established are sent to civil institutions. According to their sanitary reports, the average time for observation of all cases has been forty-two days. Owing to the fact that asylums are plentiful, this scheme adapts itself to their immediate needs so far as the men are concerned, according to Stier.* But Stier claims that officers, and non-commissioned officers and old soldiers, presenting a larger percentage of chronic mental diseases, and the government being obligated to specially provide for them, should be retained in special institutions. Soldiers serving only a short period of required service properly belong to civil asylums. Sommer and Schäfer argue for the special care of all insane soldiers by military authorities, as occurs in Russia and Austria. It is noticeable that as the military surgeons learn more of military psychiatry, they take more and more care of the military insane. Thus at Charenton, which is designated to receive the military insane from Paris and its surroundings, those in authority have recently stated that they receive less and less military insane since the military surgeon is better instructed on this subject. Since the mentally diseased are so often in conflict with military law and are entitled to

government compensation for any disability incident to the service, and since military conditions are distinctly different from civil conditions, it is always difficult and often impossible to equitably sever the soldier's relations with the military organization in the first few months of mental disease.

France, Italy, Holland, Belgium, Spain, England, and the United States have followed and are following the German plan of sending all cases of mental disease to civil institutions as soon as the diagnosis is established, providing the patient has not meanwhile recovered, when he is discharged on certificate of disability.

Naturally, all these countries have felt the need of special instruction of military surgeons on the subject of military psychiatry. Naturally, too, the instruction is more complete in proportion to the countries' knowledge of the subject. Where psychiatry is a closed book, except to a few who have given their lives to its study, there it is put aside as one of the things impossible to connect with the medical department of the army.

Roubinovitch, recently in a personal letter to Granjux, explains the Russian method of instructing the military surgeon in psychiatry, as follows:

At the Military Academy, the fourth-year students have theoretical instruction once or twice each week. The fifth-year students frequent psychiatric clinics and assist in the examinations of patients. Especial lectures are given during the period preceding examination. Among the twenty-five young surgeons designated for work at the different clinics of the University of St. Petersburg, a certain number are assigned to psychiatric work.

Germany, besides the psychiatric work in the regular course and the state examination, has a special three months' course for military surgeons at the Charité Hospital in Berlin under Prof. Ziehen. In addition, certain ones are assigned to psychiatric clinics for a period of two years. Austria has special instruction in the military hospitals, with departments for mental diseases, at Vienna and Budapest. Further special instruction is given as proves necessary.

Italy assigns each year some young surgeons to the psychiatric clinics for two years.

In France, Granjux," Regis," Rayneau," Simonin, Antheaume,"

and many others, have given special attention to the psychiatric instruction of the military surgeon. Regis has a six months' course in his clinic for naval and army surgeons. The Congress of Alienists and Neurologists has passed resolutions covering necessary changes in the laws, and the government has taken the necessary action. As a result, the military surgeons themselves have done a great deal of special investigation of conditions and are taking more care of the military insane, as is evidenced by the statement quoted above from Charenton, that they are receiving fewer military insane from the Paris garrison than they formerly did, although statistics show an increase in the number of cases.

Belgium has a special course of instruction at Hospital de Malines.

Holland has some special instruction at the two asylums in Java.

In England Psychiatry is one of the specialties available to military surgeons of a certain grade.

Under the inspiration and direction of General Torney, our own army is entering upon a period of instruction for military surgeons at the Government Hospital for the Insane, and a general increase of a knowledge of psychiatric matters among military surgeons. Dr. William A. White has placed all the large resources of the above hospital at their disposal. The many acute cases (there is a yearly admission rate of more than 600), and the special opportunities in the studies of the cerebrospinal fluid, of the histopathology of the cortex, and of the psychological laboratory, make this an exceptional opportunity.

The following are the most important problems and phases of the situation confronting military surgeons from a psychiatric point of view:

1st. Military insane are younger in years and show a higher recovery rate than do the civilian insane. Of 1102¹¹ enlisted men received directly from the active army, at the Government Hospital for the Insane in the period, 1899 to 1908, we find that 72 per cent were under the age of thirty years, and 94 per cent under the age of forty years. That our recovery rate is high, is shown by the following table, comparing this class with the total insane population of the institution:

	Philippine Period 1899-1902		Quiet Period 1903-1908		Whole Period 1899-1908	
	Enlisted Men per ct.	W. Hosp. per ct.	Enlisted Men per ct.	W. Hosp. per ct.	Enlisted Men per ct.	W. Hosp. per ct.
1. Discharged:						
(a) Recovered ..	64	34	49	35	57	34
(b) Improved ...	8	15	12	15	9	16
(c) Unimproved..	1.5	2.36	4	2.74	2	2.64
2. Died	7	32	6	33	7	32
3. Remaining	20	17	29	15	25	16

Thus it is seen that the enlisted men alone average 23 per cent more recoveries than all the cases (civil, marine hospital, navy, and army) in the hospital. A further study of these cases showed that acute infectious diseases, sunstroke, or heat exhaustion, and alcohol were etiological factors in a series of cases, giving total recoveries of 71 per cent, or 13 per cent more than the average for enlisted men, and 37 per cent more than the general average for the whole hospital. Besides, 189 cases were discharged recovered before reaching the Government Hospital for the Insane. This corresponds with the report of Dr. A. B. Richardson¹⁰ to this Society covering the period of Cuban hostilities, namely, "Exciting causes operating for a limited period, such as produce exhaustion, or are the result of the toxic influence of specific poisons circulating in the system, produce a comparatively simple form of mental disturbance which tends to early recovery."

2d. Because of the nature of military life, the military insane are potentially dangerous to a larger number of people. Up to the earlier period of the Roman Empire, armies existed for the purpose of carrying out someone's ideas of conquest and of protecting the country against some threatening invasion. A permanent or prepared army was not considered necessary. The battles were conflicts where individual strength and endurance counted for most. They were characterized by hand-to-hand encounters. Now it is a question of organization and fighting at long range. The latest German bullet is said to have a zone of deadly fire extending nine hundred yards in which a man cannot stand erect and remain alive. Larger bodies of men are engaged and the duration of a battle may be estimated in weeks instead of days. Troops must march long distances as rapidly as possible to take their positions in the firing line. It is needless to say that the

success of such an organization demands the previous training of its component parts and that there shall not be one weak part in the whole system.

3d. After days and nights of marching and bivouacing, with an unseen enemy opposing with deadly fire the advance in this direction or that, it is easily understood that only the strongest can successfully do their part and that the last atom of effort is being expended. No matter how carefully concealed under other circumstances, any physical or psychical weakness is revealed at these times, and the psychical breakdown, in the nature of the case, requires more care than the physical breakdown. Psychiatrists¹⁸ report that during the Russo-Japanese war they saw insane wandering about everywhere, in spite of the best psychiatric organization the world has ever seen. In one instance a whole regiment of Russians became infected with the fear that the Japanese having stopped their advance were about to open upon them with artillery fire. Officers and men ran as best they could for twenty-four hours, until checked by the main column. Psychic infection from the weaker ones seems the most reasonable explanation of this most remarkable occurrence. The large number of hysterical and exhaustion psychoses observed by the Russians show us what preparations we must make in the event of a modern battle. We know of no means of preventing the presence of some psychical weaklings at such a time. Even if it be a fact that they recover promptly, it is also admitted that they are especially liable to a recurrence if placed again in the same circumstances. One Russian officer, well known for his bravery, became afflicted with aphonia in each battle and led his men by means of signs. But finally he broke down completely and was sent home a nervous wreck.

4th. Every civil community has its "queer" people. Their peculiarities are recognized and ignored. The positions they may fill are numerous and they form a useful part of their communities. An effort has been made in different countries to estimate the number of insane actually receiving institutional care. The consensus of opinion seems to be that this number is in the neighborhood of 66 per cent. But even recovered cases of mental diseases have been universally refused admission to armies. Germany re-

quires that all cases in institutions between twenty and forty years of age be reported to the proper authorities, and recovery from mental diseases, as well as any mental defect that would limit their serviceableness, is a bar to duty in the German Army. The local authorities are supposed to report at the time of making up the list of conscripts any person whose peculiar conduct has been the subject of public notoriety.

My own " investigations show that of the military insane received at the Government Hospital for the Insane, 13 per cent had had previous attacks of insanity, the pictures of 60 per cent showed stigmata of degeneracy, and 15 per cent had suspicious symptoms in the history of their previous life. From this it is evident that in a large percentage of our military insane, a careful examination and an inquiry into their previous history would have led to their rejection at the time of their enlistment.

5th. Psychopaths and weak-minded form a large part of the rejections in the German Army. Becker" has shown that they equal the number of cases of mental diseases and 78 per cent evidence cause for rejection in the first six months of their service, while in the same period only 61 per cent of mental diseases were evident. It was apparent from the previous histories of these cases that many of them had lived in more or less harmony with their environment and earned their living prior to enlisting in the service. But military life requires an accounting for each hour of the day and the performance of certain duties at the same time each day, as well as complete and unquestioning obedience to orders. Besides, men in the barracks are quick to discover the weaknesses of the individual and seek to correct them by making them evident. In the normal, faulty habits of life are quickly rectified in this way. But the psychopath and weak-minded consider this a form of persecution, seclude themselves from the others, absent themselves from the garrison, and finally often are guilty of desertion. The drill and sentry duty prove beyond their ability. The fatigue of maneuvers and active field duty are an additional source of stress. Some of them develop an acute transitory psychosis. Looking at the question entirely from the standpoint of the individual, it is unreasonable to expect that he will be benefited by army life. From the standpoint of defense of the coun-

try, it is a crime to attempt to make use of any such inferior material.

6th. Becker reports that a large number of the preceding class come under observation at Strasburg because of having been in conflict with military law. Of 500 discharges of soldiers coming directly from the ranks to the Government Hospital for the Insane in the period 1860 to 1909, I find that 12.6 per cent were "dishonorable," or "without honor" discharges, or had records of military offenses, chiefly desertion. Evidently the military insane and defectives come in conflict with military law more than the same classes of civilian insane and defectives come in conflict with civil law. Since laws are made to govern the individual so that he may live in harmony with his environment, it is natural that the special peculiar environment of military life should produce laws more difficult to observe by those who are opposed to any environment that does not harmonize with their own distorted views. Hence the military surgeon will be obliged to aid in the solution of medico-legal problems, relatively more than the psychiatrist in civil life and usually where the opportunity for prolonged careful observation is not present.

The remedies for all these problems peculiar to military psychiatry are simple in principle, but difficult in application, and vary in different countries. They are usually divided under the following heads:

1. Measures to avoid the enlisting of mental incompetents. This carries with it the idea of a standard of mental efficiency. The German Army orders on this subject specifically state that "existing or previous mental disease or any mental deficiency that would interfere with the serviceableness of the candidate" is a bar to enlistment. Our own standard, fixed by Congress, is simply that the candidate "must speak, read and write the English language," and that he must take out his first citizenship papers. Evidently poor cranial development, multiplicity of stigmata of degeneration, and peculiarities of manner and action would first attract the eye of the skilled investigator, and arouse suspicion. A knowledge of the previous life would show lack of reasonable mental attainments and lack of reasonable success in his previous environment. A mental examination and observation would de-

termine whether in all probability the candidate could adapt himself to a military life. Such has been the method of procedure in other countries. In our own circumstances the three months of training at the recruit depot offer the best opportunity for investigation. We have not the police records, the list of those discharged from insane asylums, the reports as to progress in schools and the reports of clergy—all of which are available in European countries. We must depend chiefly upon our mental examination and general observation.

2. In all countries it is found that with all the care possible in the examination of a large body of men in a limited time, some incompetents will escape. Consequently the less apparent cases will pass on to the company commander and the post-surgeon. It is also the universal experience that these two working in harmony can earlier detect incompetency and abnormality. This once established leaves the very simple remedy of removing them from the service.

3. The next step of establishing the degree of responsibility of the service for the man's disability presents unusual difficulties from the fact that the etiology of mental diseases is not usually clear. The deciding of the relative value of the predisposing and exciting causes under which the disease arose is difficult to a trained observer with a lifetime of experience. Especially is it difficult in the early stages of mental diseases during which the military surgeon has the cases under observation. Fortunately the final decision in the case of an application for pension rests with the Department of Pensions, where the case can be fully studied. According to the present rulings of the Pension Department, mental disabilities are rated under the heading, "incapacity to perform manual labor (second grade)," which means \$18.00, \$24.00, or \$30.00 per month. Those "requiring a special attendant" properly belong in the Government Hospital for the Insane. But the large number of recovered cases among the military insane form a class difficult to judge from the standpoint of "incapacity to perform manual labor."

4. The last duty of the military surgeon is the helping to establish the degree of responsibility of a military offender who has

any mental defect. The offenses recorded in the five hundred discharges mentioned above, were as follows:

Desertion	49
Absence without leave	26
Assaulting officer or comrade.....	21
Fraudulent enlistment	8
Larceny	2
Selling clothing	1
False official statement	1
Disobedience of orders in war time.....	1
Embezzling	1
Rape	1
Disability, result of own misdeeds.....	7
Not specifically designated.....	20
Total	138

In Dr. Becker's list of twenty-five cases with specialized offenses, the offenses correspond to the above, namely:

Absence without leave and desertion.....	16
Disobedience of commands.....	6
Disrespect to superiors.....	2
Assault	1
Total	25

Evidently a knowledge of the conditions of military life is essential in considering these cases. One very great advantage of the military surgeon is the better source of information under military conditions of the previous conduct of the offender. A disadvantage for the offender advanced by the French is that military surgeons are more inclined to accept simulation of mental symptoms and not to recognize the degree of irresponsibility. In this connection *Stier* makes the point that in considering military offenders, the legal rather than the medical viewpoint must be assumed, since a military offense is relatively more serious and the effect upon the regard for authority among the other soldiers is more dangerous than in civil life. All of these points are in addition to the questions involved in the medico-legal aspect of civilian cases.

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GOVERNMENT HOSPITAL FOR THE INSANE, WASHINGTON, D. C.

ALCOHOLIC AMNESIA AND AUTOMATISM.*

By CHARLES W. PILGRIM, M. D.,

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Alcoholic amnesia and automatism are subjects of great interest to the physician, the lawyer and the layman. This is particularly the case where acts of a serious or criminal character have been performed, for here, in order to establish a scientific fact, we must overcome the deep seated convictions of the ordinary man. Under conditions where the victim has the greatest inducements to fabricate his case and to simulate his symptoms, it is extremely difficult to make the lay, or even the legal mind, understand that apparently rational, natural and even complicated acts may be performed by alcoholics when suffering from such a condition of amnesia as to make them utterly unconscious of what they are doing, completely oblivious of the results of their acts, and absolutely without remembrance of what they have done while in this dreamlike state. Within a comparatively short time three cases have come under my personal observation, which seem to me to be fairly typical examples of this interesting condition and, therefore, worth recording.

My first case was a man fifty-one years of age with a family tendency toward mental disease. He was a gentleman in appearance and manner; a brain worker and a graduate of Union College. He gave a history of periodical excesses in the use of alcohol extending over a period of twenty years. Sometimes he would go two or three years without heavy drinking, but more frequently for only two or three months. He was a kind, affectionate man, and a devoted husband, except when under the influence of alcohol. During the three years preceding my observations he had been under treatment for alcoholism in two other State hospitals, and had also been, for short periods, in several

* Read at the sixty-sixth annual meeting of the American Medico-Psychological Association, Washington, D. C., May 3-6, 1910.

sanitariums. It was stated that he would frequently disappear for days or weeks at a time and upon his return would have no recollection of where he had been or of what he had done.

During his stay in the hospital he was quiet, gentlemanly, and well behaved, associating freely with the better educated patients. He spoke of imaginations of sight that he had had during delirium sometime before, but was free from delusions and hallucinations during the period of my observation.

After a short residence in the hospital he was given a limited parole, upon the promise that he would not leave the grounds, but he soon violated his pledge and left surreptitiously. He deliberately planned to avoid pursuit and went north to Kingston instead of south toward New York, which was his objective point.

Upon his return to the hospital he said that he remembered taking several drinks in Kingston, but from that time until he came to himself two weeks later in New York he claimed that his memory was a complete blank. He could not remember arriving in New York, nor could he recall any of the happenings of the previous two weeks. Later events made it probable that he had spent the most of this time in a disorderly house. A couple of weeks after his return an attempt was made by a woman to record, in the office of the county clerk, a deed of some property near the hospital. This deed was regularly executed, properly signed by the patient, and described with accuracy the transfer of a piece of property to which he had not the slightest claim. The date was that of the amnesic period, and the patient stoutly maintained with every evidence of sincerity, that he had not the slightest recollection of ever having seen it. According to newspaper reports, several other deeds of a similar character came to light at a later period.

He was taken home soon after his return to the hospital and since then nothing is known of his history.

The case presented the ordinary symptoms of chronic alcoholism in an individual of neurotic tendencies, with slight deterioration, characterized by periodical exacerbations with amnesia.

My second case is that of an Englishman, forty-nine years of age, who came to this country about thirty years ago. He came under my observation August 6, 1909.

His family history was incomplete, but enough was learned to

make it certain that his father was an intemperate man who died in his early thirties as the result of an accident due to drink. The patient had a fair education and for the previous nineteen years had worked in hotels mostly in the capacity of a subordinate clerk, or an assistant steward, in charge of supplies. His wife stated that three years before admission he drank to excess, but so far as she knew he had partaken of stimulants only in a moderate degree for the year preceding his admission. Two months before coming to the hospital he began to suffer from symptoms of cirrhosis of the liver due to his previous excessive use of liquor. On July 21, he reported for duty at 6 a. m. at the hotel where he was employed, but told his employer that he did not feel well and asked to be excused from his work for the day. He had been complaining somewhat of languor for two weeks before, but had been able to attend to his work. Upon receiving permission to remain away he left the hotel and from that time nothing is known of his actions until the afternoon of the next day, when he went to the police station in Troy, which is about eighty miles from New York, and gave himself up. He stated that he could not remember his name, where he had come from or how long he had been in Troy. In fact, he could give no details in regard to his personal history. He was committed to the Rensselaer County jail and remained there until August 6, when he was sent to the Hudson River State Hospital under the name of John Doe. When admitted to the hospital he was still unable to tell anything about himself and apparently made every effort to recall past events. He was quiet, rather unsocial and a little depressed over his condition, but otherwise acted in a normal manner. He manifested diminished pain sensibility, absent corneal, and lessened pharyngeal, reflexes. Having in mind hysterical influences, which the above mentioned symptoms suggested, he was twice hypnotized and brought under the influence of suggestion. He was told that he would be asked to name the letters of the alphabet and the suggestion was made that when he reached the letter with which his name began he would recall his name. When the experiment was continued upon reaching W he said that his name began with that letter, and finally gave his name, which did begin with W, and later on he recalled his home address and put us in communication with his wife, who had been anxiously searching

the metropolitan hospitals ever since his disappearance. Gradually he began to recall the past, first repeating the happenings of the two previous days, and then the ones preceding until the amnesic period was encroached upon as far back as the morning of his disappearance from New York, but he could never recall with any distinctness anything that happened from the time he left the hotel in the morning until he reached the station house in Troy.

He remained under observation for about three weeks and during that time displayed no evidence of delusions; his orientation was correct and his memory for remote events quite good; there were some evidences of hallucinations of smell, and during the amnesic period he saw ugly faces, but he was able to correct these impressions and recognized them as imaginations. His condition was diagnosed as one of hysterical amnesia with alcohol as an important factor in its production.

The third case is that of a man thirty-nine years of age, who was employed in a shirt factory where he was recognized as a proficient cutter. The family history shows that the father died of paralysis and that a maternal cousin died in a hospital of a deterioration psychosis. The patient received a common school education, and began his factory work when 15 years of age. At the age of 17 he began to drink beer in moderation and perhaps two or three times a year would become intoxicated. When about 21 he began to dabble in spiritualism and developed the idea that he possessed mediumistic powers to a considerable degree. Later he travelled around the country giving exhibitions of clairvoyance, mind reading, etc. Seven years ago he began to use liquor to excess and his alcoholic habits reached their maximum about three years before admission. About two years ago he began to be troubled by the face of a woman which appeared over his left shoulder. This face was a fantastic one and did not resemble that of anyone he had ever known. He claims that when he drank to excess he did not see this face and gives this as an excuse for his intemperate habits. During this period his amnesic spells also began. Generally they would last only an hour or so, and he thinks that they were at first periods of preoccupation rather than periods of distinct amnesia, but in the winter of 1908-1909 he had an attack of complete amnesia which lasted two days. On Saturday and

Sunday he had been drinking freely and the events of Monday and Tuesday were a complete blank. On Wednesday morning he went to the factory in fear and trepidation fully expecting to be discharged for his fancied absence on Monday and Tuesday. But, much to his surprise, the foreman said nothing to him. He then began to make cautious inquiries of his fellow workmen and found that he had been at work on Monday and Tuesday and that no one had noticed anything peculiar in his actions. His fellow workman at the cutting machine said that he had been rather quiet, but, aside from that, he had performed the usual amount of work in his customary manner. Thus for two days his actions had been purely automatic and natural enough to pass unnoticed by his daily associates while he was in a state of complete "dream consciousness." Similar amnesic periods of shorter duration occurred from time to time when he would have no recollection of what he was doing, although his work would be done in the usual way, up to November, 1909, when the second prolonged period occurred. For nearly a week he had been drinking heavily, and on the Monday preceding his admission he started for the factory at the usual hour, but returned to his home within a short time saying that he did not feel well enough to work. His wife said that he lay down for a while, but soon got up and after a dispute, chased her out of the house. He then returned to his room and later in the day his daughter found him hanging by a clothes line from a door. The physician who was called advised that he be sent to the jail, where, it is said, that he was quiet for a while, but later became excited. The patient himself had no recollection of anything that happened from Sunday morning until Tuesday afternoon when he found himself scantily clothed walking around in his cell. When admitted to the hospital he was greatly concerned over his condition and wanted to be treated for it and expressed a willingness to stay until cured. For a period of three months the patient was unable to recall a single event from Sunday morning to Tuesday noon. It was then thought best to try to synthesize his memory by hypnoidal influences, according to the method of Sidis. Three trials were made before the events were completely recalled. After an hour's effort the events of Sunday were recalled, but as the patient was fatigued and the recollections came very slowly the session was terminated. A few hours later another

trial was made and the events of Monday, from early morning to the time of the attempted suicide, were recalled in proper sequence. A few days later a third trial was made. All efforts failed, however, to penetrate the blank following the suicidal attempt, although there were a few hazy recollections of Tuesday morning. Tuesday afternoon's events were not a part of the period of amnesia, for they had been clear in the patient's mind from the time of admission.

His story of the events which he had hitherto been unable to recall were, in brief, as follows:

After leaving home Sunday morning he visited a saloon and went to his mother's house where he had dinner. In the afternoon he went for a walk and in the evening made a call. He slept at his mother's house that night and in the morning started out prepared for work. He visited several saloons before reaching the neighborhood of his shop, and by that time was somewhat intoxicated. He left for home, had an argument with his wife about insurance premiums, attempted to assault her with a pair of shears, and, when she escaped from the house, went upstairs to bed. He awoke in the evening about dusk, prepared a clothes line with which to commit suicide, and found a peach basket upon which to stand. This was not stout enough, as it collapsed under his weight, and he took a wooden box, adjusted the noose and kicked the box from under him. The last thing he recalls is trying to get his hands into his pockets so as to prevent himself from grasping the rope.

The attempt at suicide was so nearly successful that the first physician who called suggested that a coroner be notified, but eventually the patient was resuscitated and taken to jail. This was Monday night and the events from the suicidal attempt, until the clear events of Tuesday afternoon, are shadowed by amnesia explained by the serious and nearly effectual attempt at strangulation. All other events were recalled with considerable distinctness and were given with a wealth of detail. His statements were later submitted to his wife who verified them in every essential point.

He remained under observation for about four months and since leaving the hospital nothing has been heard of him. The general air of abstraction and preoccupation, with the lack of real

interest in his home affairs, the continuous reaction to visual hallucinations, and the tendency to explain his difficulties on a spiritualistic basis, would seem to point to a diagnosis of a serious disorder, probably along the lines of a dementia præcox deterioration process.

These three cases are similar in many respects to the cases described by Dr. W. C. Sullivan, of the Pentonville prison, England, to whom, probably more than to anyone else, we owe our clinical knowledge of the impulsive and automatic acts of the chronic drunkard.

There are many points of similarity in these cases; they all possessed a certain amount of education and intelligence which enabled them to lend co-operation in the study of their cases; none had committed acts of sufficient gravity to warrant legal prosecution, and, therefore, had no great inducement to fabricate and deceive; and each had some nervous instability to predispose to the amnesia and automatism which became prominent under the influence of alcohol.

Crothers considers this last point a very important one and says that "this trance condition will always be found associated with a peculiar neurotic state, either induced by alcohol, or existing before alcohol was used."

Alcoholic amnesia may be partial or complete, in fact the percentage of cases where the amnesia is partial is higher than it is in epilepsy. The less complete it is the greater the difficulty in establishing its existence in medico-legal cases. In some cases the experiences of the amnesic period may be recalled for a time and then be completely forgotten again. Sullivan quotes a case from Maschka's *Handbuch* in which a man after committing a homicide said, "Don't tell anyone about this," and later on completely forgot the act. He also says that threats in advance of an impulsive act are no evidence of premeditation for "the fixity of the morbid condition in which the impulse has its origin is likely to give to action in the automatic phase a continuity with that in the waking consciousness which is easily construed into premeditation."

Modern authorities do not believe that amnesia is either synonymous or identical with unconsciousness, but that it means merely the submerging of a certain patch of memories into the sub-

conscious mental life. A similar belief is also entertained in regard to the automatism associated with amnesia. It is thought that there is always a certain amount of consciousness present and that the psycho-pathological basis is probably due to a dissociation of consciousness. In other words, as Dr. Coriat expresses it, instead of being in an unconscious condition the patient is in a condition of other consciousness, for which he is amnesic in his ordinary waking state.

The question of the proper psychological treatment is one of importance, for it is known that when the upper consciousness is rendered weak or inert by experimental distraction, or by the induction of the hypnoidal state of Sidis, "the subconscious memories surge up, break through the strata of the upper consciousness and become manifest." Coriat believes that many cases will not recover except under proper treatment and that cases of spontaneous recovery from the condition of amnesia are extremely rare. These theories are certainly very fascinating and are of the utmost importance in medico-legal cases where the defense is along the lines of irresponsibility due to so-called automatic states. Of course in such cases the history of the patient should be very carefully gone into, and when there is a history of chronic drunkenness or epilepsy, with evidences of instability of the nervous system, and a history of previous automatic acts, then the defense of alcoholic automatism with amnesia should not be lightly brushed aside, but should receive most careful attention from all who believe in the just administration of our laws.

There is still another case to which I should like to briefly call your attention, although it occurred as far back as 1785. We all know that a certain amount of amnesia and automatism are common phenomena of ordinary intoxication, and nowhere have I seen a description of this condition which equals in literary flavor and subtle humor that given by Alexander Coventry in his "Journal of a Scotch Medical Student." In describing a visit to his uncle he says:

It was 2 p. m. when I reached Musselburgh, and between that and Inveresk I met my uncle, who said he had some business to transact in town which would not detain him, and dinner would be ready on our return. We stopped at a tavern, and there my uncle met Mr. Dalloway, from the green isle, an old acquaintance, a painter; past times and old scenes were

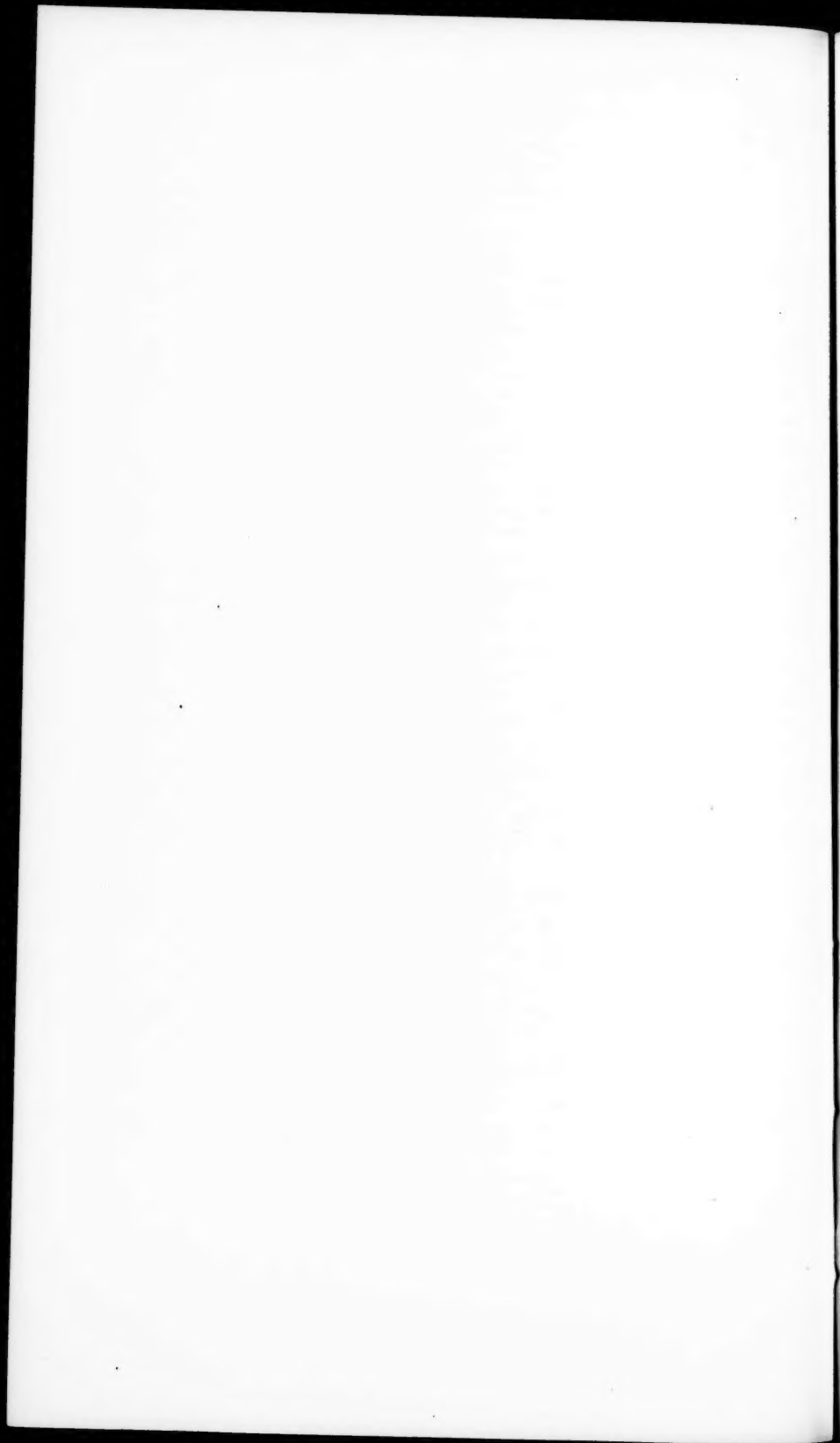
talked over; we had whiskey punch; cheese and cake were brought out, punch was succeeded by porter, and the latter retired by oporto, dinner was forgotten, or supplied by the oat cake and cheese, the usual accompaniment of sociability in a Scotch tavern. I ate a light breakfast and had taken a long walk, and the mixture of liquors began to affect my stomach and head, they being little used to such diet. I had sense enough to see that a short time would put me *hors de combat*, and I would be drunk at a tavern. I sought the back door. In a high wall opposite I observed a white stone; could I walk across the lane and put my hand on it I concluded, by keeping it close aboard, it would bring up short any lee lurch I might make to starboard, thus giving me some chance of reaching port without capsizing, for the wall continued to Inveresk and within a few yards of my uncle's. The experiment succeeded, my hand touched the stone, and I started within two feet of the wall. This was my last consciousness until on Sunday morning I found myself in bed with my clothes on, having simply removed my boots. I had found the bed where I usually slept at my uncle's and had lain down upon it. The period from my starting from the white stone in the wall to my awaking in the morning is a perfect blank in my existence, of which I have not nor ever had any consciousness, yet my uncle's man informed me that I had reached the room and went to bed without assistance. It was like the delirium of fever, it made no impression, it left no trace behind. According to this, my experience, is not the savage's reasoning more just than that of civilized man? An Indian does not resent an injury done when the aggressor is intoxicated. The Indian says, "Rum did it." It may not be safe to consider it as an aggravation because it might be simulated, yet the malice prepense is no more founded than in the maniac. From the time I started from the white stone to the next morning I might have committed a dozen murders and yet been unconscious of hurting a fly. Although the period alluded to seems a blank in my existence, the suffering of the next morning is too deeply impressed ever to be erased from the tablet of memory.

And let us hope that this assertion was strictly true and that the disagreeable experience, so interestingly described, kept him ever after from following in the footsteps of his illustrious countryman who found his greatest pleasure in

"Bousing at the nappy
An gettin' fou and unco happy."

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A STUDY OF THE DEMENTIA PRÆCOX GROUP IN THE LIGHT OF CERTAIN CASES SHOWING ANOMALIES OR SCLEROSES IN PARTICULAR BRAIN-REGIONS.*

By E. E. SOUTHARD, M. D.

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I. THE SCHISM OVER DEMENTIA PRÆCOX.

When it became apparent that the psychiatric world must needs split over the genesis of dementia præcox, one party describing it as a species of intoxication with brain damage and the other as a dissociative mental disease without structural damage to the brain, one found one's mind almost wholly open in the matter. Perhaps, at the outset, one was not quite ready to admit dementia præcox (Kraepelin's disease) among such relatively immortal entities as general paresis and hysteria, for example. The dissociation hypothesis possibly seemed the wider of the two, permitting each case to be a law unto itself in such wise that a proper diagnosis really turned into a fairly full katamnesis.

In any event it was gratuitous to hypothecate a toxine *toto coelo* and much more innocent to assume dissociations, especially if one could give precise descriptions of these for a number of typical cases. To be sure, some workers asserted characteristic satellitoses and other evidence of neuronie disease in the lower cortex-layers of the cerebrum; but these findings were perhaps inconstant, probably shared by other types of disease, possibly secondary either to the disease or to something else, and certainly incapable of affording any explanation of the mechanism of dementia præcox.

If one scanned the situation in neuropathology, the outlook was not bright. Restricting oneself to the cerebral cortex alone, cytopathology appeared to have fallen on evil days. Nissl had given up his specific nerve-cell intoxication pictures. Alzheimer's methods for split products of nerve-cell metabolism had not been developed or fully applied. And, in any case, the effects of terminal complicating disease (intestinal, pulmonary, bladder, and the like) with a variety of intercurrent infections and intoxications seemed to render dubious the outcome of almost any strictly cytopathological study, at least such as would contemplate symptomatic correlations. To conceive a "katatonic storm" sweeping through the cortex and leaving behind it a characteristic trail was within reason, but surely difficult of proof in the midst of so many cortical storms about the point of death.

Stratigraphic considerations were more hopeful. In fact, ever since Alzheimer's brief paragraph in 1897—*Ebenso findet sich ganz zweifellos bei der Katatonie eine pathologische Gliafaserbildung in der Rinde, anscheinend auf gewisse Rindenschichten (und die Markleiste) beschränkt*¹—there has been an ever recurrent assertion that satellitosis and correspondent nerve-cell disorder of the inner cortex-layers are characteristic of dementia præcox, or at least of its katatonic form. In fact these findings were supposed to draw together the two diseases, dementia præcox and general paresis, since both showed the same changes, complicated in the latter by a multitude of other stratigraphic changes as well as by exudation.

Such opinions are not confined to Germany. Thus, in France, Klippel and Lhermitte, 1908,² consider dementia præcox to be due to a progressive atrophy of the association neurones. The lesions of dementia præcox, they say, are all essentially neuroepithelial, *i. e.*, confined to nerve-cells and neuroglia, and never essentially vasculoconjunctive, or, as we should express it, ectodermal, never mesodermal. The fundamental lesion is "a regressive atrophy of the nerve-cells of the deep cortical layers and disappearance of the interconnecting processes," with neuroglia proliferation running *pari passu* with the atrophic process. Meningovascular lesions, miliary hemorrhages, congenital malformations, terminal lesions due to cachexia or infection, are frequent, but are not indispensably found. Even cerebellar atrophy, and various instances

of visceral hypoplasia, are simply signs of frail organisms, which either precede without causing dementia præcox or are purely incidental effects thereof. Klippel, in discussion, admitted that similar neuroepitheliæ (ectodermal) lesions were found in other chronic mental diseases.

Perhaps no work has been more widely quoted in this direction than that of Sioli, done partly at Munich under Alzheimer and partly at Bonn and summarily reported in 1909. Sioli's statements refer, however, only in part to stratigraphic considerations.

Sioli in his brief *Autoreferat*, 1909,³ states that he found in *all parts examined* of 20 cases of dementia præcox certain evidences of destruction of nerve tissue. A portion of Sioli's data is cytopathological (nerve-cell disease with increase of Scharlach-stainable lipoids), but he indicates that the process may lead to atrophy or disappearance of cells, amounting in places to distinct stratigraphic disorder. Degenerative products were found accumulated in clear non-cellular spaces about the vessels, and protagonoid and Scharlach-stainable substances were found in tissues and in adventitial cells *en route* to the vessels. Inflammatory exudation was quite lacking. Perivascular and periganglionic glia-cell proliferation, fibrillary gliosis in the subpial zone, in deep cortex-layers, and in the white matter, alterations of glia-cell cytoplasm, amœboid neuroglia in the white matter occurred. The severest cases, especially those with their perivascular spaces packed with degeneration products, are thought to correspond with acute katatonic exacerbations.

Alzheimer, in his masterly statement concerning split products of nerve-cell and fibre metabolism, 1910,⁴ maintains that much new light has been thrown, by his new methods and adaptations of old ones, upon such conditions as status epilepticus, severe paralytic attacks, deliria, and katatonic excitements, and he believes that anyone using these methods will be convinced that dementia præcox and epilepsy are severe organic diseases. Alzheimer would almost risk differentiating histologically between a katatonic excitement and a mania, because the katatonic case will show characteristic amœboid glia-cells, whereas the mania will not. For the purpose of this differentiation, severe disease of the other viscera must not step in to complicate the picture since such disease may bring out the amœboid glia-cells in the nervous

system. Again, a severe toxic delirium at its height and a severe katatonic excitement at its height will exhibit similar changes (just as the posterior columns of a tabes and a spinal transection might be confused under certain circumstances from the granule-cell content of both). The fact seems to be that "organic" changes can now be demonstrated in a number of conditions formerly termed "functional." The differentiation of katatonia remains difficult, however, on account of precisely the conditions mentioned by Alzheimer, toxic delirium and severe bodily disease, which may produce somewhat the same pictures.

One remarkable case of sudden death in a stuporous katatonic who had no demonstrable physical disease is mentioned by Alzheimer to show that, without loss of any nerve-cell or degeneration of a single axis-cylinder, a true *Hirntod* may occur due to changes demonstrable by methods for the split products.

Unfortunately for the neuropathologist, such cases of pure *Hirntod* are rare. In the Danvers State Hospital material, infection at the time of death is almost the rule. Exact experiences with the cultivation of the more easily growing organisms from the blood and cerebrospinal fluid in 150 unselected cases have been communicated by Gay, Canavan, and myself.* Cerebrospinal fluids are particularly prone at death to show organisms. This experience, as well as an inspection of the great members of tuberculous and acute infections in our material, caused us to discount in advance the cytopathological change *per se* and to hold somewhat in doubt the acute or recent neuroglia change as indicating mental disease. The asserted stratigraphical changes (cell-atrophies and losses in lower cortex-layers and correspondent satellitosis) seemed more trustworthy, but obviously less differential (seen also in general paresis and in some senile cases).

The status of the dementia præcox question may be summed up as follows:

One body of workers prefers to describe dementia præcox in such terms as *dementia sejunctiva* (Gross⁷), *Missverhältniss zwischen Affekt und Vorstellung* (Kölpin⁸), *dysphrenia* (Wolff⁹), *dementia dissecans* (Zweig¹⁰), *schizophrenia* (*Zerreissung oder Spaltung der psychischen Funktionen*) (Bleuler¹¹), *Apraxia ideatrix* (Dromard¹²), emphasizing in general the dissociative factors which emerge upon psychological analysis of the more clearly cut

cases. "Disruptions of judgment," "specific factors in individual cases," "unpsychological reactions," "intrapsychic ataxia" or more specifically "noothymopsychic ataxia," "intrapsychic inhibition," "psychogenic conflicts," "psychological dispositions," "psychic caosos," "psychic trauma," are phrases picked almost at random from certain modern discussions.^{13 14 15}

Other workers pin their faith to the supposed "organic" character of this disease. The ground of this belief is often scarcely more than that the disease is essentially deteriorative on the mental side and hence *must* be "organic" on the cerebral side. Others set much store by autointoxication and believe that the effects of autointoxication must be registered in the cerebral cortex, could we but read it aright. Proceeding from the dictum that insanity and, therefore, dementia præcox are brain diseases, these workers argue that dementia præcox is presumably a destructive disease of the cerebral cortex, after the manner of general paresis.

A few workers accord significance to both the functional psychic features and the organic cortical features. There is, however, a general tendency to take sides, with the almost universal feeling that the histologists have not satisfactorily proved the "organic" nature of the disease.

I was instigated to the analysis of my own material by the conviction that, though the histopathologists had not proved their point beyond peradventure, the functionalists were in the same plight. I had been engaged upon an analysis of cases of mental disease with onset after the fiftieth year,^{16 17} and had there come upon so many instances of satellitosis in the deeper layers of the cortex without distinct katatonic features clinically that I had been disposed to discount the differential character of deep-layer gliosis for any type of mental disease. This reaction, in brief, appeared to be a necessary and natural result of destructive processes involving these layers, and the deposition or increase of neuroglia cells in this locus did not assume to my mind the differential character of such findings, as, *e. g.*, the plasma cell exudate of general paresis. Even the plasma cell, as all will admit, is not *sensu strictiori* pathognomonic for general paresis (witness trypanosomiasis, not to mention tuberculous and frankly luetic processes). Gliosis of the deep layers of the cortex is obviously

far less differential than plasma cell exudation, if only because normally we find neuroglia and satellite cells in this region.

Feeling a deal of uncertainty about the differential value of stratigraphic alterations and especially of satellitosis, I was also not disposed to believe that dementia præcox would turn out to be a diffuse cell disease. All that Alzheimer maintains, if I understand him aright, is that anyone who chooses to examine dementia præcox material by certain methods can convince himself that it is invariably an "organic" disease.¹⁸ It would be a much longer step to assert that the changes invariably found are differential changes. Indeed, deliria and severe physical disease are consistent with the same changes.

Neither stratigraphic changes nor cytopathological changes, taken as exhibited *throughout a brain*, appealed to me as likely to throw much light on the immediate mechanism of dementia præcox. Indeed these changes bring up more new problems than they solve old ones in the wide field of neurobiology.

The *topographic idea* then occurred to me. In making, some years ago, an analysis of the first 1250 autopsies of the Danvers State Hospital and collecting the lesions of different parts of the brain in card-catalogue form, I had been much struck with the preponderance of brain lesions in certain areas. The frontal incidence was particularly high, and this, I took to be due to the greater liability of the frontal tissues (on the stock evolutionary grounds). Having no convenient opportunity to correlate these findings with clinical data (a want now happily supplied by the index of clinical symptoms which Dr. Page has had constructed), I did not further work up these relations.

In connection, however, with work on encephalitis,¹⁹ on gliosis,^{20 21} and especially on the "soft brain,"²² I had begun to gather unusually careful data concerning focal and general variations in consistence of brains. I had, therefore, some hope that my series would prove unusually suitable for topographic study.

Upon analysis, as the sequel will prove, not merely focal scleroses, but also easily identifiable macroscopic atrophies (or aplasias) were found in a surprisingly large number of cases. My topographic data depend, therefore, only in part upon the palpable mild scleroses which I had been especially studying.

On the basis of the anatomical data and without necessarily any reference to microscopic studies (which have been carried out more or less thoroughly in the series), I wish to commend the topographic idea concerning lesions in dementia præcox to neuropathologists. Whether a superior frontal atrophy or a postcentral aplasia is or is not superior to a psychic scar or ataxia, as really explanatory of the mechanism of dementia præcox, I will not pretend to say. In any event, the brains of all dementia præcox cases should be carefully examined.

II. MATERIAL, WITH STATISTICAL ANALYSIS.

The autopsy material of the Danvers State Hospital Laboratory from May, 1902, to January, 1910 (including the services of Drs. A. M. Barrett, E. E. Southard, and a portion of Dr. H. M. Adler's), consists of 647 cases. Sixty-three of these have been chosen, on clinical grounds, as probable or possible examples of dementia præcox. The 10 per cent thus chosen constitute the maximum rather than the minimum number of possible cases, since it was thought best to include certain doubtful cases for purposes of comparison. As will presently appear, several of the cases are so clouded by other factors, such as certain congenital features, alcoholism, or attacks suggestive of manic-depressive insanity, that the diagnosis of dementia præcox may appear extremely doubtful. It was felt that histological features might serve to extract the true cases.

As it is extremely desirable not to confuse phenomena of a normally aging brain with possible findings based on mental disease, the age of the subjects at death is important. The series is quite representative.

TABLE I.

Classified by decades according to age at death, the material shows:

11 cases dying in the third decade	(21-30)= 8 male, 3 female	
19 " " " " fourth "	(31-40)= 7 " 12 "	
12 " " " " fifth "	(41-50)= 3 " 9 "	
11 " " " " sixth "	(51-60)= 6 " 5 "	
8 " " " " seventh "	(61-70)= 7 " 1 "	
2 " " " " eighth "	(71-80)= 2 " 0 "	
—	—	—
63	(21-80)= 33 " 30 "	

It is also necessary to secure a representative series from the standpoint of age at onset. The series even includes two cases with strongly congenital coloring.

TABLE II.

Classified by decades according to age at onset, the material shows:									
2 cases with congenital features (possibly imbecile)= 2 male, 0 female									
6	"	"	onset in the second decade (11-20)			=	6	"	0
28	"	"	third " (21-30)			=	13	"	15
20	"	"	fourth " (31-40)			=	9	"	11
7	"	"	fifth " (41-50)			=	3	"	4
<hr/>							<hr/>		
63							33	"	30

It is essential to know how long the morbid process may be supposed to have lasted. Although many of these cases are not at all progressive, yet in many others slow transitions in clinical disease-type are exhibited. The total durations are given in

TABLE III.

Classified by duration of symptoms in hemidecade periods, the material shows:

18 cases under 5 years in duration..... 8 male, 10 female									
11	"	between 6 and 10 years in duration,	5	"	6	"			
10	"	"	11	"	15	"	3	"	7
3	"	"	16	"	20	"	2	"	1
7	"	"	21	"	25	"	4	"	3
4	"	"	26	"	30	"	2	"	2
3	"	"	31	"	35	"	3	"	0
3	"	"	36	"	40	"	2	"	1
1	"	"	41	"	45	"	1	"	0
2	"	"	46	"	50	"	2	"	0
1	"	"	61	"	65	"	1	"	0
<hr/>							<hr/>		
63							33		30

Although it is well known that various clinical phenomena are rather thoroughly commingled in this disease, making the older distinctions hard to maintain and more or less justifying Kraepelin in his union of types under a single caption, yet certain features do particularly characterize some cases, and the following table presents the impressions which these cases made, so to say, in the rough, before intensive analysis.

TABLE IV.

SUPERFICIAL ANALYSIS OF CASES.

Hebephrenic	5 cases, 2 male, 3 female
Katatonic	17 " 9 " 8 "
Paranoid	30 " 18 " 12 "
Dementia-præcox-like:	
Imbecile	1 " 1 " 0 "
Alcoholic	1 " 1 " 0 "
Manic-depressive, involutional and unclassified	9 " 3 " 6 "
	<hr/>
	63 " 34 " 29 "

There was such an admixture of symptoms in several of the cases, or symptoms of doubtful import, that possibly the katatonic cases should number 20, and the paranoid cases, 32. Imbecile traits came in question in seven cases in all, though possibly not to obscure the eventual diagnosis in more than three. Alcoholism can, with difficulty, be disengaged from the clinical picture of five cases. The at times doubtful, or eventually unclassified cases, which have been chosen to study with this group, number 15; but of these perhaps eight only can be fairly claimed as not instances of dementia præcox; and, if a somewhat liberal definition be admitted, all these cases will warrant consideration. As Table IV indicates 52 cases (29 male, 23 female) probably belong in the group with some certainty on clinical grounds.

In the process of anatomical analysis, much may be gained from the weight correlations of certain organs. If the brain weights stand up well, we at least have indication that no such conditions as those underlying general paresis or cerebral atrophy are present. The brain weights in this series correspond well with the normal, though they show a slight tendency to reduction (2 per cent).

TABLE V.

BRAIN WEIGHTS BY SEX.

Male (26 cases)	1336	dementia præcox,	1357	normal (Vierordt)
Female (29 cases)	1218	"	1235	"
	<hr/>		<hr/>	
Differences	118	"	122	"
Percentages:				
Male	98%	"	100%	"
Female	98%	"	100%	"

An analysis of the brain weights according to age at death yields

by no means so even a curve, doubtless because the numbers are too small for this particular purpose. The results are as follows:

TABLE VI.

BRAIN WEIGHTS BY DECADES IN WHICH DEATH OCCURRED.

Male	21-30, 6 cases.....	1333	dementia præcox, 1358	normal (Boyd)
Female	21-30, 3 "	1278	"	" 1239 " "
Male	31-40, 5 "	1476	"	" 1366 " "
Female	31-40, 11 "	1194	"	" 1222 " "
Male	41-50, 3 "	1350	"	" 1348 " "
Female	41-50, 9 "	1237	"	" 1214 " "
Male	51-60, 6 "	1353	"	" 1345 " "
Female	51-60, 5 "	1222	"	" 1225 " "
Male	61-70, 5 "	1364	"	" 1315 " "
Female	61-70, 1 "	1100	"	" 1210 " "
Male	71-80, 1 "	1390	"	" 1290 " "

It might be suspected that the different forms of dementia præcox would lead to different degrees of brain-weight reduction. The weights in the hebephrenic, katatonic, and paranoid cases, in accordance with the clinical analysis of Table IV, have been arranged:

TABLE VII.

Hebephrenic, male	2 cases.....	1338	1357	normal (Vierordt)
female	3 "	1168	1235	" "
Katatonic, male	9 "	1329	1357	" "
female	8 "	1193	1235	" "
Paranoid, male	12 "	1309	1357	" "
female	11 "	1240	1235	" "

The differences are all less than 70 grams, and the weights are consequently within five per cent of the assigned normals.

Since the duration of the disease, though it certainly does not vary with the duration of any active process in all cases, might be supposed to bear some relation with the extent of any destructive process, the weights have been arranged according to duration:

TABLE VIII.

Cases with duration under 10 years:

Male	1331	1357	normal (Vierordt)
Female 16 cases.....	1223	1235	" "

Cases with duration 11-20 years:

Male 5 cases.....	1261	1357	" "
Female 7 "	1243	1235	" "

Cases with duration over 20 years:

Male 10 cases.....	1375	1357	" "
Female 6 "	1173	1235	" "

Obviously these figures produce no even curve; but, should they be confirmed by other material, the interference could certainly be drawn that these brains stand wear and tear particularly well.

If such figures tend to show that no coarse katabolic effects evince themselves in the brains of this group, it is interesting to inquire whether any evidence of such disorder can be traced in other organs by this method.

TABLE IX.

HEART WEIGHTS.

Male 31 cases.....	281		
minus 3 hypertrophies (500 + g.)..	244	313	normal (Vierordt)
Female 27 cases.....	264		
minus 1 hypertrophy.....	253	310	" "

TABLE X.

LIVER WEIGHTS.

Male 30 cases.....	1369	1579	normal (Vierordt)
Female 28 "	1257	1526	" "

TABLE XI.

SPLEEN WEIGHTS.

Male 30 cases.....	160		
minus 1 case wt. 870.....	132	149	normal (Vierordt)
Female 27 cases.....	106	180	" "

TABLE XII.

COMBINED KIDNEY WEIGHTS.

Male 31 cases.....	280	277	normal (Vierordt)
Female 29 "	255	264	" "

Tables IX to XII appear to show that certain organs of the trunk are more disposed to evince losses in weight than is the brain in dementia præcox. The kidney weights, however, stand up well. The weight of the spleen, as always, showed marked variations, and these variations largely depend probably on certain terminal conditions independent of mental disease.

Reductions in average weights of heart and liver reach a little over eight per cent, for both males and females in both series. It is hard to draw a significant conclusion therefrom.

To sum up the data of this section, we learn from a fairly representative series of cases of dementia præcox and similar diseases that a reduction in brain weight of two per cent is perhaps to

be expected in the total group, that the reductions in brain weight of five per cent occur in certain forms (here a larger number of cases is required for deductions), that the brain weights do not undergo progressive reduction with the duration of the disease, and that the hearts and livers of the series show in general a reduction of eight per cent in weight. Since the weights of the trunk viscera probably vary rather uncontrollably in the present state of knowledge (the factors of muscular activity and of nutrition in these patients come particularly in question), it is plain that more stress must be laid on brain conditions. The brains must be approached, therefore, with the premonition that changes, if any, will be fine changes, and possibly qualitative and transformatory rather than destructive.

III. GROSS ANATOMICAL ANALYSIS OF THE BRAIN FINDINGS.

As it is our object to show *either*, first, that there are no characteristic brain findings in this series of cases *or*, secondly, that there are characteristic findings common to the series, it is obviously necessary to exclude cases with certain features which we are sure are not characteristically allied with dementia præcox. Such complicating features are *coarse cerebral atrophy* and *regionary arteriosclerosis*. These features complicate and sometimes influence the course of dementia præcox; but it is certain that arteriosclerosis and highly probable that coarse cerebral atrophy are not characteristically associated with the disease.

As is well known, the question, whether brain atrophy exists, cannot be safely answered from the brain weight alone, since apparently high weights are consistent with atrophy of originally large brains, and apparently low weights may mean simply that the original weights were low. Qualitative data are safer guides here.

Five brains gave the qualitative impression of *generalized atrophy*. All these cases were of long total duration (11 years or more).

TABLE XIII.

Autopsy Number.	Clinical Number.	Sex.	Age.	Disease-Type.	Duration.	Terminal Disease.	Brain Weight.
752.	9888.	F.	64.	hebephrenic,	9y.	pneumonia, 7d.	1100.
958.	10738.	F.	37.	paranoid,	11y.	exhaustion, 1m.	1210.
1266.	7559.	F.	58.	paranoid,	13 ++ y.	dysentery, some weeks.	1250.
1274.	11027.	M.	56.	katatonic,	31y.	hemiplegia, 1m.	1365.
1297.	7511.	F.	47.	paranoid,	19y.	cancer of uterus, 2 + m.	1390.

It seems safe to eliminate this group from prior consideration, despite the fact that the gliosis shown may be more or less closely related with dementia præcox.

One of the best indices of damaging local arteriosclerosis is afforded by *cysts of softening*, which were found in three cases, 1274 and 1297 of Table XIII, and 1171 (5986, F., 43, paranoid, 17+ (30?) y., brain weight 1115g.), also excluded from prior consideration.

Also it may be safer at first to exclude seven cases (1099, 13180, M., 67; 1121, 13398, F., 56; 1174, 9769, F., 48; 1258, 2, M., 64; 1270, 617, M., 68; 1337, 15017, F., 45; and 1368, 12120, M., 56) on the score of *marked sclerosis of vessels of the circle of Willis*. It is certain that this sclerosis has no direct effect upon the mental life; but there is at least a suspicion of vascular disease in the finer branches in such cases (only two of which in this series, viz., 1337 and 1174, are under 56 years of age).

It is noteworthy that we are required to exclude on these grounds (grounds, namely, of complicating "organic" brain-disease) only about 20 per cent of our series. This confirms the impression gained from our statistical analysis of the brain weights.

There is another general condition, frequently found in cases of all descriptions (both sane and insane), which might be considered to have some bearing especially upon the histology of the superficial layers—*chronic leptomeningitis of diffuse distribution* (to the focal distributions we shall return in a moment). Eleven cases (842, 904, 913, 943, 958, 1014, 1025, 1027, 1093, 1234, 1338) may be excluded on this ground. These 11 and four others (already excluded) yield another perhaps surprisingly small percentage (about 22 per cent) of cases showing diffuse chronic leptomeningitis.

For completeness are also presented the data concerning

TABLE XIV.

DURAL AND CALVARIAL CONDITIONS.

Arachnoidal villi unusually developed.....	3 cases
Thickening of dura mater (not included under adhesions).....	4 "
Chronic internal hemorrhagic pachymeningitis.....	3 "
Dense calvarium	9 "
Thick calvarium	6 "
Thick and dense calvarium.....	2 "
Thin calvarium	3 "
Calvarial adhesions of the dura mater.....	25 "

If we rely upon the statistical analysis of Section II, we cannot be so sure that mild *focal lesions of an atrophic or sclerotic nature* have nothing to do with processes in dementia præcox, since these lesions will not appreciably influence brain weights. It is, of course, *à priori* unlikely that such circumscribed foci, which are doubtless in the vast majority of instances due to some degree of local tissue destruction, can correspond with the extended series of vital reactions which we term dementia præcox. Nevertheless, it is wise to examine our series carefully for foci of a slightly destructive or perhaps purely irritative character which might bear on the course of certain cases.

Consequently, excluding as diffusely atrophic five cases, as markedly arteriosclerotic (cysts of softening or basal cerebral arteriosclerosis) eight cases, as showing diffuse chronic pial changes 11 cases, we remain with a material of 39 cases, which deserve primary consideration from the standpoint of *possibly significant focal brain lesions*. Obviously the results of the search in these 39 cases (two of which must be excluded through inadequate protocols) may be applied, with due caution, to the remainder.

A group of 14 cases amongst these 37 "non-organic" cases showed certain *minor lesions* made out in the gross, but *not frankly destructive, some possibly congenital in origin*. A summary view of these cases is presented in

TABLE XV.
MINOR MACROSCOPIC BRAIN LESIONS IN DEMENTIA PRÆCOX.
I. Pre-Rolandic Lesions.

Autopsy Number.	Clinical Number.	Sex.	Age.	Disease-Type.	Duration.	Frontal Lobe Lesions.
840.	11211.	F.	38.	katatonic,	3y.	Atrophy and gliosis of frontal lobes.
1062.	7987.	F.	38.	paranoid (alcoholic)	11 + y.	Gliosis of superior frontal, prefrontal, and orbital gyri.
1143.	8823.	F.	47.	paranoid or katatonic,	10y.	Gliosis of frontal, including orbital, gyri (v. also cerebellum).
1294.	10862.	F.	37.	paranoid,	6y.	Frontal lobe gliosis (v. also post-Rolandic and cerebellar groups).
1310.	13582.	F.	28.	hebephrenic mannerisms,	4y.	Frontal lobe gliosis (v. postcentral group).
1358.	10580.	M.	24.	katatonic,	10y.	Gliosis of left inferior frontal lobe.
1360.	10168.	M.	51.	suicidal,	10y.	Atrophy of prefrontal gyri.

II. Post-Rolandic Lesions.

				Occipital Region Gliosis.
1137.	6531.	M. 35.	paranoid, later 15y.	Right superior parietal microgyria (atrophia?).
1168.	11863.	F. 24.	hebephrenic 3½y.	Bilateral aplasia of post-central gyri.
1298.	14591.	F. 36.	katatonic, 10m	Right postcentral atrophy (v. discussion).
1310.	.....See Frontal Group.....			Left postcentral aplasia or atrophy.
1149.	11641.	M. 57.	paranoid, 32y.	Occipital region gliosis.
1294.	.....See Frontal Group.....			Occipital region gliosis.
1317.	12143.	F. 44.	paranoid, 21y.	Occipital microgyria.

III. Infra-Sylvian Group.

				Cerebellar Lesions.
1319.	14597.	F. 31.	paranoid, 8y. (imbecile)	Superior temporal anomaly.

IV. Cerebellar Lesions.

1034.	12756.	M. 35.	first paranoid 2y. later katatonic,	Sclerosis of dentate nuclei of cerebellum.
1143.	.....See Frontal Group.....			Sclerosis of right dentate nucleus, culmena, and clivi of cerebellum. Pons and olives firm.
1168.	.....See Post-Rolandic Group.....			Sclerosis of right dentate nucleus, cacumena, and clivi of cerebellum. Sclerosis of olives.

A somewhat similar small group of four cases has shown certain appearances in the spinal cord, indicating abnormality of quite doubtful interpretation.

TABLE XVI.

GROSS LESIONS OF THE SPINAL CORD.

Autopsy Number.	Clinical Number.	Sex.	Age.	Disease-Type.	Duration.	Gross Lesions of the Spinal Cord.
1317.	.....See Post-Rolandic Group.....					Cervical portion abnormally firm.
1319.	.....See Infra-Sylvian Group.....					Cervical cord abnormally large.
1335.	.....See Table XVII.....					Cord abnormally small.
1350.	4820.	M. 62.	katatonic,	35 + y.		Gliosis of lumbar spinal cord.

Here then, as indicated in Tables XV and XVI, is a group of 15 cases showing certain minor chronic lesions (or evidences of aplasia) in the central nervous system of quite doubtful, though

certainly very varied, origin. Adding four more cases of *generalized cerebral sclerosis* of a mild form, not associated with gross atrophy, viz.

TABLE XVII.

Autopsy Number.	Clinical Number.	Sex.	Age.	Disease-Type.	Duration.	
991.	11047.	M.	35.	paranoid,	11y.	Brain weight 1170 grams.
1135.	11296.	F.	28.	katatonic,	6y.	Brain weight 1430 grams.
1303.	11624.	F.	55.	hebephrenic,	25y.	Brain weight 1220 grams.
1335.	13648.	M.	32.	katatonic (alcoholic)	20y.	Brain weight 985 grams.

we obtain a total of 19 cases of *slightly, though macroscopically, abnormal central nervous system* in a series of 37 cases, selected as not showing coarse complicating features like brain atrophy, intracranial arteriosclerosis, cysts of softening, and the like.

These 19 cases, or at all events a certain number of them, demand attention as a group of dementia præcox cases with lesions of doubtful interpretation, but not readily set aside as non-significant.

If we should group our cases up to this point, we should obtain (1) *complicated cases*, showing gross lesions certainly not related with dementia præcox, 40 per cent, (2) *cases with minor lesions* having a doubtful relation to dementia præcox, 31 per cent, and (3) a residuum of *cases without observed gross lesions*, 29 per cent.

It will be wise at this point to analyze the cases of groups (2) and (3), *i. e.*, the non-complicated cases from a clinical point of view. The 37 cases are distributed as follows:

TABLE XVIII.

Hebephrenic	4	2 male, 2 female
Katatonic	12	5 " 7 "
Paranoid	13	7 " 6 "
Alcoholic	1	1 " 0 "
Doubtful	7	3 " 4 "

If we eliminate the alcoholic (1240, no gross lesions) and doubtful cases (819, 939, 1151, no gross lesions; 1143, 1360, frontal lobe lesions; 1350, spinal cord lesion; 1135, generalized gliosis, Compare Tables XV-XVII) for the time being, we obtain 52 per cent of our group (now reduced to 29 cases) showing minor lesions.

A microscopic analysis of the 15 cases showing minor lesions may indicate what type of lesion to look for in those cases which failed to show gross lesions. Lesions of this sort should be demonstrable by any method which displays cells and nuclei well.

In case the lesions should prove non-stratigraphical, *i. e.*, not ideally demonstrable by complete cell-counting, the task will be more difficult. The qualitative intracellular or special extracellular properties which this latter search would entail will require material very seldom obtained, material free from terminal complications. Cases hitherto reported have suffered perhaps from such terminal disease. Tuberculosis is a special offender in this direction. Tuberculosis occurred in our series as follows:

TABLE XV.

TUBERCULOSIS IN 63 CASES OF DEMENTIA PRÆCOX.

Active forms	21 cases
Healed and chronic forms.....	16 "
<hr/>	
All forms	37 "

TUBERCULOSIS IN 39 CHOSEN CASES.

Active forms	16 cases
Healed and chronic forms.....	7 "
<hr/>	
All forms	23 "

In both series there is 58 per cent of tuberculosis, counting all forms. One case in three of the whole series either died with or showed an active form of tuberculosis, whereas about two cases in five of our chosen "non-organic" series showed similar active tuberculosis.

Whereas it has never perhaps been convincingly shown that active tuberculosis outside the nervous system can produce important non-exudative lesions within the nervous system, it is probably a sound policy to exclude such cases from a list *sans reproche*, especially if intracellular conditions are to be studied. This process would leave us with 23 cases free from coarse destructive brain lesions and from active tuberculosis.

Nine cases showing *decubitus*, 10 cases of soft brain" (only one of which occurred in the non-organic series), and three cases of edema of brain substance might also offer obstacles to finer

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cytological analysis. For this purpose a list of 21 cases is available; but clinical doubts and difficulties remove eight cases, leaving 13 cytologically appropriate cases (840, 884, 891, 944, 1006 (typhoid fever), 1034, 1081, 1298, 1303, 1317 (carcinomatosis), 1350, 1358, 1360).

To sum up, we have divided our cases upon anatomical grounds into three groups, (1) cases complicated by gross destructive brain lesions (40 per cent), (2) cases having certain minor anomalies or mildly destructive or irritative lesions (31 per cent), and (3) cases without observed gross lesions (29 per cent). After excluding cases unsuitable for analysis on various grounds, we obtained a group of 29 cases, 15 of which (52 per cent) showed the minor anomalies and mild lesions just mentioned. It will be the task of the next section to study these 15 cases intensively to see whether they evince any common features. Later studies may then apply these observations to the rest of the series, in which significant lesions may well occur hidden among complications.

IV. CLINICAL AND ANATOMICAL ANALYSIS OF FIFTEEN CASES OF DEMENTIA PRÆCOX SELECTED AS SHOWING CERTAIN MINOR GROSS LESIONS OF THE NERVOUS SYSTEM.

At this point it seems pertinent to inquire whether, upon a closer analysis of the cases which show minor gross lesions or anomalies, any hint of correlation between these lesions and individual clinical phenomena can be detected. It must be pointed out forthwith that no very close correlation can be hoped for, since we deal with far less constant phenomena than, *e g.*, those of epilepsy. The histories, presented below in as condensed form as deemed advisable to offer a sound basis for clinical diagnosis, obviously betray far greater variations in course and qualitatively more complex features than would a similar number of histories of epileptics. But clinical and anatomical correlations even in epilepsy are difficult, despite the firm establishment of the "uncinate" group on an anatomical basis. In view of the clinical variety of the dementia præcox group, or even of the group of cases characterized by katatonic symptoms, it is at the outset doubtful whether a "frontal lobe group," a "postcentral group,"

a "cerebellar group" can be firmly established for dementia præcox. Obviously such a grouping should be earnestly essayed.

The *condensed histories*, drawn from the records of numerous workers (among whom may be mentioned Drs. H. W. Mitchell, H. A. Cotton, H. M. Swift, and Charles Ricksher, who have been at the heads of the various services during the major part of the time covered by these reports) and the *summarized autopsy protocols* (for which the pathologists, bacteriologists and assistant physicians named below have been responsible) are here presented.

CASE I.—S. M., D. S. H., No. 12211, Path. No. 840. Female, 37, single, school-teacher. Born in Cambridge, Mass., of Irish parentage. Was a case of dementia præcox, katatonic type, of three years duration.

Heredity.—Negative.

Previous History.—Patient taught school from 22-35. In August, 1901, after a period of over-work, the patient became depressed ("had lost her soul"); her mind dwelt on suicide. Patient remained unoccupied; two weeks after onset of depression was committed to McLean Hospital, where she showed languor, slow movements, little spontaneous talk, a general effect of emotional gloom and certain somatic delusions ("bowels gone"). A brief attack of excitement followed, with confusion and resistiveness. Short periods of excitement followed with later increasing inertia, and little spontaneous talk. Seven weeks after commitment she began to show increase of muscular tension and had to be tube-fed.

Patient was transferred to Danvers Hospital April 1, 1903, and then showed a flushed face, clammy skin, and considerable acne. Pulse slow and weak, respirations shallow.

The katatonic signs consisted of an evenly distributed increase of muscular tension. Patient lay constantly in bed, on one side, with arms loosely adducted, hands clenched, legs flexed, chin and knees drawn together, eye-lids tightly closed, a fixed facial expression, with lips protruded.

At first patient would take food from a cup, but tube-feeding was later constantly resorted to.

Patient would flinch slightly to pin pricks, but would not move limb even if pin was deeply thrust. Risus sardonicus appeared at times. Occasionally, the eye-lids were kept half closed, and the eye-balls rolled upward.

Within six weeks, a slight physical failure was noted. Patient would occasionally speak at night. Later, talking spells occasionally appeared, such as "Go away," "Stop that," "Oh, what shall I do? I can't read. Oh, a thousand times. It is nothing at all"; or again, "I shall have to stop in this bed forever. God Almighty in Heaven, here I am talking, and I have no head. I am as empty as space. There is nothing in this bed, and I have no head. I have fixed everything wrong. It is terrible. Look, I am talking without a head. It is impossible. Is it not? An empty bed.

I am a skeleton bitch. This is a frightful impossibility." Looking at her hands she said, "These are not hands. How can I do this talking without a head? God help me. It is all wrong. I simply imagine that I see them. There is nobody here, the bed is empty. I don't know what I am doing."

Emaciation became rapid late in 1903, and patient died after a period of continued fever.

ANATOMICAL DIAGNOSIS (A. M. Barrett).

Cause of Death.—Phthisis pulmonalis.

Chronic Conditions.—Poor musculature. Malnutrition. Bilateral chronic adhesive (apical and posterior) pleuritis. Tuberculous cavity of apex of left lung. Cavitation and disseminated tuberculosis of upper lobes of both lungs. Enlarged bronchial lymph nodes. Bronchitis. Chronic fibrous ("milk patch") pericarditis.

Recent Conditions.—(Possibly bronchitis and bronchial lymphnoditis). Fatty liver (microscopic evidence). Fatty kidney (microscopic evidence, slight).

Nervous System.—Brain weight 1090 grams. Generalized increase of consistence of brain. Slight visible atrophy of gyri of both frontal regions. Cerebral cortex unusually dark in color, but without puncta cruenta.

CASE II.—P. F., D. S. H., No. 10147, Path. No. 991. Male, 35, married, carpenter. Born in Nova Scotia of Nova Scotian parents. Was a case of dementia præcox, paranoid type.

Heredity.—Negative.

Previous History.—Masturbation; sexual excess. At 21 years married; five children. At 31 years "nervousness," loss of confidence, somato-psychic delusions ("heart gone," "insides working"). In hospital quiet, apathetic, hypochondriacal. Discharged at 35 and next year recommitted. Diagnosis, hypochondriacal paranoia. The diagnosis was later changed to chronic melancholia. Emaciation and suspicion of phthisis at 38 years. Signs of phthisis upon recommitment at D. S. H., October 25, 1902. Extremities blue, teeth poor. At first refused food. Groaning and complaints of pain and abnormal sensations. Disorientation (lack of interest?) for time and place.

"I can't speak because it pulls down and pulls up, and is wound around me." At no time katatonic signs, except mutism (possibly paranoid origin).

ANATOMICAL DIAGNOSIS (A. M. Barrett).

Cause of Death.—Phthisis pulmonalis.

Chronic Condition.—Malnutrition. Poor musculature. Chronic obliterative pleuritis, bilateral. Phthisis pulmonalis, with cavitation and fibrosis. Chronic persplenitis. Chronic interstitial nephritis. Exostosis on inner surface of frontal bone. Adherent dura.

Acute Condition.—Acute fibrinous pericarditis (organism of colon group).

Nervous System.—Brain weight 1360 grams. Slight generalized cerebral gliosis.

CASE III.—R. O., D. S. H., Nos. 11871, 12756, Path. No. 1034. Male, 35, single, shoe-factory operative. Born in Italy. Was a case of dementia præcox, at first paranoid, later katatonic, of two years duration.

Facts concerning heredity unknown.

Previous History.—Emigrated from Italy at about 23. Shoe-factory operative of average capacity. Easily affected by alcohol (some beer and whiskey daily). In March, 1904, stated that anarchists and socialists wished to kill him; that he heard men talking and singing in the next room; thought that people were going to "do him," and ceased to work steadily. In the course of five or six weeks patient began to feel that his friends had turned against him, and when a man borrowed his mandolin and returned it minus one string, patient reasoned that he was being hypnotized. At that time, the diagnosis lay between dementia præcox and alcoholic insanity, the former preferred.

Patient was committed to Danvers Hospital April 27, 1904. Undersized, unusually hirsute. There was slight swaying in the Romberg position. The knee-jerks were exaggerated. Patient was reticent. At one time said, "There is going to be something this side and then on the other side," making signs with his fingers around his head. Once asked to play cards, snatched the cards from the table and refused to give them up. Dulness and inactivity increased, with a tendency to stupor, interspersed with brighter intervals. Nine months after admission, periods with marked echopraxia and some cerea flexibilitas, with diminished response to peripheral stimuli, set in. Patient became reluctant to eat.

Discharged February 2, 1905, to go to Italy. Patient was readmitted October 5, 1905, with mutism, cerea flexibilitas, slight resistiveness on being roused, fixed facial expression, staring eyes and pouting lips. Slight albuminuria was now demonstrated for the first time. Automatism shortly developed, with prompt obedience to commands, such as protrusion of the tongue for incision. Patient habitually sat for hours with hands spread over knees, staring at the floor. Saliva was held in mouth for hours. Symptoms of pulmonary gangrene set in and patient died a week later, January 23, 1906.

ANATOMICAL DIAGNOSIS (E. E. Southard).

Cause of Death.—Gangrene of right lung.

Chronic Conditions.—Emaciation. Unequal pupils. Irregularity of right pupils (iris narrow above). Slight mitral valvular sclerosis. Small heart (150 grams, but left ventricle 1.5 cm. thick), and small aorta (5 cm. in circumference).

Acute Conditions.—Gangrene of posterior portion of right upper lobe of lung (culture, streptococcus pyogenes and diphtheroid organisms), with acute fibrinous pleuritis, bronchial edema, and swelling of bronchial lymph nodes. Septicemia (determined on culture, streptococcus pyogenes and diphtheroid organisms). Unusual hirsuteness.

Nervous System.—Brain weight 1410 grams. Dentate nuclei abnormally firm and yellowish.

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CASE IV.—D. R., D. S. H., No. 7987, Path. No. 1062. Female, 38, married. Born in Nova Scotia of Irish parentage. Was a case of dementia præcox, paranoid type, of eleven years duration.

Facts of heredity unknown.

Previous History.—At the age of 28, about a month before commitment to D. S. H., patient had been depressed and suicidal, with delusions that she was being killed, had been partially buried, had seen spirits, had had two hearts and was immortal. It appeared that the patient had been lately deserted by her husband and much over-worked. She had had three children, one living.

Shortly after admission, August 31, 1895, she was given the diagnosis of primary delusional insanity. She showed râles in both apices and edema of ankles. Patient worked in the laundry. Was occasionally reticent, but at other times freely stated her delusions. Tooth-aches and neuralgic pains she attributed to external influences. Was at times abusive, noisy and obscene. At other times would show no evidence of mental disorder for several weeks. In the course of two or three years, physical inertia increased, delusions could be still elicited, with somewhat less coherent explanations. Sample of conversation: "I was referring if you thought I felt well and if it was for your purpose to ask these questions. I proved it whether I am worthy of my home. There are two police stations and if you are acquainted with medical things you will see the church about me." Active auditory hallucinations appeared at times. The tuberculosis probable at admission became definite 10 years later. Patient died after a terminal disease of about four months. This patient apparently never showed well-defined katatonic signs, unless occasional reticence with physicians and a single period of mutism can be so interpreted.

ANATOMICAL DIAGNOSIS (E. E. Southard).

Cause of Death.—Phthisis pulmonalis.

Chronic Conditions.—Poor musculature. Malnutrition. Poor teeth. Lineæ atrophicæ of abdominal skin. Chronic obliterative pleuritis (right), and extensive adhesions of left pleura. Extensive bilateral tuberculosis with cavitation of lungs and bronchitis. Enlargement and induration of bronchial lymph nodes (tuberculosis, microscopically). Aortic, common iliac, internal iliac (slight), renal (microscopic), and (slight) coronary arteriosclerosis. Fatty liver with (microscopically) slight portal cirrhosis. Genitalia atrophic. Thyroid small (aberrant thyroid above bifurcation of trachea, right anterior, $2 \times 1.5 \times 0.5$ cm.). Marrow of right femur red.

Nervous System.—Brain weight 1260 grams. Gliosis of superior frontal, prefrontal and orbital gyri. Brain (except gliotic areas and occipital gyri) and spinal cord (especially lumbar) reduced in consistence. Cerebellar cortex darker than cerebral cortex.

CASE V.—M. R., D. S. H., No. 6531, Path. No. 1137. Male, 35, single. Shoe-factory operative. Born in Lynn, Mass., of Irish parentage. Was a case of dementia præcox, at first paranoid, later at times katatonic, and finally demented; of about 15 years total duration.

Heredity of insanity denied. Father possibly alcoholic. A brother died of tuberculosis.

Previous History.—September 1, 1891, patient developed a delusion that persons in an electric light plant opposite his shop were putting currents on him. Insomnia, constipation, lack of appetite, pains in the head and confusion of mind followed, and patient was committed to D. S. H., October 2, 1891, with exaggerated knee-jerks and little or no physical disorder. Apparent dementia increased. Unusual motions and gestures could not be explained by patient. At first he worked well in the brush shop, but later ceased work, became mute, and sat still in one place, smiling. The attendant could get patient to walk up and down the ward. Limbs were habitually blue and cold. In taking exercise, a certain number of steps were always taken and a certain crack in the floor was followed. When seated, the limbs were held fixed and the mouth open. At times the patient would sit gesticulating for long periods at a time. Later, the gestures and peculiar attitudes ceased, but mutism persisted. Once, in 1903, the patient whispered a few words. There was never any refusal of food during the Danvers stay. Death January 19, 1906.

ANATOMICAL DIAGNOSIS (E. E. Southard).

Cause of Death.—Phthisis pulmonalis.

Chronic Conditions.—Malnutrition. Chronic adhesive pleuritis of left upper lobe and right apex. Mitral valvular sclerosis. Brown atrophy of heart muscle. Small heart (170 grams, but left ventricle 1.3 cm. thick) and small aorta. Chronic interstitial nephritis. Dilatation of stomach. Right testis fibrotic.

Recent Conditions.—Tuberculous pneumonia of left lung, with acute fibrinous pleuritis. Bronchopneumonia of posterior portion of right lung. Early enterocolitis (?) with large, soft mesenteric lymph nodes. Acute splenitis. Fatty liver and kidney (both slight).

Nervous System.—Brain weight 1465 grams. Superficial asymmetry in minor sulci of cerebrum. Microgyria of right superior parietal lobule (no certain evidence of atrophy, but more flaring sulci; in particular the right parieto-occipital fissure is 1 cm. deeper and much wider than the left). Focal chronic fibrous leptomenigitis of right parieto-occipital fissure. Consistence of brain diminished (anterior poles least and lower surface of cerebellum less than upper surface).

Chemistry.—The water-content of three portions of the brain was determined in the chemical laboratory of the Harvard Medical School by Mr. J. B. Ayer, Jr., who found the following percentages: frontal region, 75 per cent; parietal, 77 per cent; cerebellum 82 per cent water. These findings parallel the consistence noted with the finger. The anterior poles were the least softened. The low percentage of water possibly indicates relatively high neuroglia content.

CASE VI.—G. B., D. S. H., Nos. 11641, 3238, Path. No. 1149. Male, 57, single, carpenter. Born in Salem, Mass., of American stock. Was a case of dementia præcox, paranoid type, of perhaps 32 years duration.

CASE IV.—D. R., D. S. H., No. 7987, Path. No. 1062. Female, 38, married. Born in Nova Scotia of Irish parentage. Was a case of dementia præcox, paranoid type, of eleven years duration.

Facts of heredity unknown.

Previous History.—At the age of 28, about a month before commitment to D. S. H., patient had been depressed and suicidal, with delusions that she was being killed, had been partially buried, had seen spirits, had had two hearts and was immortal. It appeared that the patient had been lately deserted by her husband and much over-worked. She had had three children, one living.

Shortly after admission, August 31, 1895, she was given the diagnosis of primary delusional insanity. She showed râles in both apices and edema of ankles. Patient worked in the laundry. Was occasionally reticent, but at other times freely stated her delusions. Tooth-aches and neuralgic pains she attributed to external influences. Was at times abusive, noisy and obscene. At other times would show no evidence of mental disorder for several weeks. In the course of two or three years, physical inertia increased, delusions could be still elicited, with somewhat less coherent explanations. Sample of conversation: "I was referring if you thought I felt well and if it was for your purpose to ask these questions. I proved it whether I am worthy of my home. There are two police stations and if you are acquainted with medical things you will see the church about me." Active auditory hallucinations appeared at times. The tuberculosis probable at admission became definite 10 years later. Patient died after a terminal disease of about four months. This patient apparently never showed well-defined katatonic signs, unless occasional reticence with physicians and a single period of mutism can be so interpreted.

ANATOMICAL DIAGNOSIS (E. E. Southard).

Cause of Death.—Phthisis pulmonalis.

Chronic Conditions.—Poor musculature. Malnutrition. Poor teeth. Lineæ atrophicæ of abdominal skin. Chronic obliterative pleuritis (right), and extensive adhesions of left pleura. Extensive bilateral tuberculosis with cavitation of lungs and bronchitis. Enlargement and induration of bronchial lymph nodes (tuberculosis, microscopically). Aortic, common iliac, internal iliac (slight), renal (microscopic), and (slight) coronary arteriosclerosis. Fatty liver with (microscopically) slight portal cirrhosis. Genitalia atrophic. Thyroid small (aberrant thyroid above bifurcation of trachea, right anterior, $2 \times 1.5 \times 0.5$ cm.). Marrow of right femur red.

Nervous System.—Brain weight 1260 grams. Gliosis of superior frontal, prefrontal and orbital gyri. Brain (except gliotic areas and occipital gyri) and spinal cord (especially lumbar) reduced in consistence. Cerebellar cortex darker than cerebral cortex.

CASE V.—M. R., D. S. H., No. 6531, Path. No. 1137. Male, 35, single. Shoe-factory operative. Born in Lynn, Mass., of Irish parentage. Was a case of dementia præcox, at first paranoid, later at times katatonic, and finally demented; of about 15 years total duration.

Heredity of insanity denied. Father possibly alcoholic. A brother died of tuberculosis.

Previous History.—September 1, 1891, patient developed a delusion that persons in an electric light plant opposite his shop were putting currents on him. Insomnia, constipation, lack of appetite, pains in the head and confusion of mind followed, and patient was committed to D. S. H., October 2, 1891, with exaggerated knee-jerks and little or no physical disorder. Apparent dementia increased. Unusual motions and gestures could not be explained by patient. At first he worked well in the brush shop, but later ceased work, became mute, and sat still in one place, smiling. The attendant could get patient to walk up and down the ward. Limbs were habitually blue and cold. In taking exercise, a certain number of steps were always taken and a certain crack in the floor was followed. When seated, the limbs were held fixed and the mouth open. At times the patient would sit gesticulating for long periods at a time. Later, the gestures and peculiar attitudes ceased, but mutism persisted. Once, in 1903, the patient whispered a few words. There was never any refusal of food during the Danvers stay. Death January 19, 1906.

ANATOMICAL DIAGNOSIS (E. E. Southard).

Cause of Death.—Phthisis pulmonalis.

Chronic Conditions.—Malnutrition. Chronic adhesive pleuritis of left upper lobe and right apex. Mitral valvular sclerosis. Brown atrophy of heart muscle. Small heart (170 grams, but left ventricle 1.3 cm. thick) and small aorta. Chronic interstitial nephritis. Dilatation of stomach. Right testis fibrotic.

Recent Conditions.—Tuberculous pneumonia of left lung, with acute fibrinous pleuritis. Bronchopneumonia of posterior portion of right lung. Early enterocolitis (?) with large, soft mesenteric lymph nodes. Acute splenitis. Fatty liver and kidney (both slight).

Nervous System.—Brain weight 1465 grams. Superficial asymmetry in minor sulci of cerebrum. Microgyria of right superior parietal lobule (no certain evidence of atrophy, but more flaring sulci; in particular the right parieto-occipital fissure is 1 cm. deeper and much wider than the left). Focal chronic fibrous leptomeningitis of right parieto-occipital fissure. Consistence of brain diminished (anterior poles least and lower surface of cerebellum less than upper surface).

Chemistry.—The water-content of three portions of the brain was determined in the chemical laboratory of the Harvard Medical School by Mr. J. B. Ayer, Jr., who found the following percentages: frontal region, 75 per cent; parietal, 77 per cent; cerebellum 82 per cent water. These findings parallel the consistence noted with the finger. The anterior poles were the least softened. The low percentage of water possibly indicates relatively high neuroglia content.

CASE VI.—G. B., D. S. H., Nos. 11641, 3238, Path. No. 1149. Male, 57, single, carpenter. Born in Salem, Mass., of American stock. Was a case of dementia præcox, paranoid type, of perhaps 32 years duration.

Heredity.—Facts not known.

Previous History.—Was perhaps not "just right" from boyhood. Had certain delusions and may possibly have been suicidal early in life, but was shortly transferred after his first stay at Danvers to the Salem Almshouse, where he was quiet and industrious. Patient showed insomnia at times and had sensations of "sparks of fire" dropping on his head.

Readmitted January 1, 1904, with signs suggesting tuberculosis at both apices. A coarse tremor of extended tongue, a moderately fine tremor of extended fingers, and markedly exaggerated knee-jerks. Examination by Dr. H. W. Mitchell showed that the knee-jerks are usually followed by momentary clonus or tonic spasm of the leg followed by general body spasm, which does not seem to be always the same. The different movements depend upon the different postures of the body at the time the knee-jerk is obtained. Often the same body spasm can be gotten by a feint to strike the quadriceps tendon. Achilles reflex is prompt, but not much increased. It is followed, however, by various spasms of the legs, the most common being a tonic spasm of the muscles of the leg and thigh, often accompanied by irregular spasms of muscles of the trunk. *Triceps* and *biceps* prompt and lively and followed by irregular body spasms. *Cremasteric* and abdominal slight. *Plantar* very much increased, followed by tonic or clonic leg spasms. Usually no lifting of right toe. Rarely a suggestion of Babinsky reflex. The only physical stigma consisted in poorly-formed lobules.

Auditory hallucinations had been frequent for many years, always in the tones of attendants or other bystanders. There was one episode of visual, olfactory and gustatory hallucinations of an unpleasant character.

Very characteristic were patient's description of peculiar spiritualistic phenomena, with "forerunners and communications." Patient would often communicate with God, assuming a rigid position, gazing into space, and saying, "God, our Heavenly Father, I would like to communicate, if convenient, don't discommode yourself!" He pauses a few moments and then says, "Is that you? Is that you really, Heavenly Father? Please come as an apparition, as strong as you can." Then in a faint voice, "That's pretty good, pretty good. Can you come a little stronger, I wish you would if you could; that pretty good, that's good. God, Heavenly Father, is it safe to show the forerunner in the face of Dr. Mitchell? Are you sure, perfectly sure? All right." He would then make a peculiar movement of the hands which he alleges is a forerunner, and has the power of destroying life. Asked to forecast the future, he calls up God as previously, and says, "I wish to ask a question in regard to Dr. Mitchell's success in the future? Is your time precious, God? Can you spare it?" He turns to the examiner and says, "He is gone now to examine. He examines by astronomy." In the meantime, patient converses pleasantly about the weather until God calls, and later assures examiner that his success is to be unlimited, and that he has received communication. Result of these communications were, as a rule, optimistic.

Patient made characteristic, elaborative, decorative drawing, ostensibly

for certain Masonic lodges. In 1905 certain slight mannerisms appeared, which later grew more frequent. He would wet his hands frequently, repeat certain muscular movements, shake his body, and make peculiar noises in his throat.

The patient died March 1, 1907, having been taken the day previously with vomiting and severe abdominal pains.

ANATOMICAL DIAGNOSIS (H. W. Mitchell and F. P. Gay).

Cause of Death.—Tuberculous enterocolitis with ulceration and perforation with localized peritonitis. *Bacillus coli communis* in heart's blood at autopsy.

Chronic Conditions.—Emaciation. Chronic fibrous pericarditis. Slight tricuspid valvular sclerosis. Chronic obliterative pleuritis (left) and chronic apical adhesive pleuritis (right). Disseminated tuberculosis of both lungs. Caseating mesenteric lymph nodes. Chronic pericholecystitis. Hepatic atrophy (especially left half of right lobe and all of left lobe). Chronic splenitis (marked).

Acute Conditions.—See cause of death. Acute nephritis.

Nervous System.—Brain weight 1490 grams. Generalized cerebral sclerosis (without visible atrophy). Occipital lobes firmer than rest of brain. Chronic fibrous leptomeningitis, confined to the superior frontal gyri. Cerebellum and spinal cord soft. Slight chronic external adhesive pachymeningitis.

CASE VII.—R. S., D. S. H., No. 11863, Path. No. 1168. Female, 24, single, a weaver by occupation. Born in Canada of French-Canadian parentage. Was a case of dementia præcox, hebephrenic type, of four years duration.

Heredity.—An aunt insane.

Previous History.—Of normal early development. Four years a weaver in Massachusetts. Deserted by lover at 20. Indifference and melancholy, auditory hallucinations, delusions of persecution, subjective sensations of heat. Occasional attacks of violence and refusal to be dressed followed.

Upon commitment, April 22, 1904, a slight tremor of tongue, slight albuminuria, and semi-adherent lobules were noted. Patient was quiet, usually mute, indifferent, occasionally irritable, and resistive. Patient lay in bed with clothes pulled over her head and would start up suddenly, rocking back and forth.

There was an apparent amnesia for recent and remote events. Auditory hallucinations, ill-defined delusions of persecution, a silly apathetic attitude persisted. Mutism developed later.

About a year after admission, signs of tuberculosis and physical failure set in, and 17 months after admission, signs of tuberculosis were detected and tubercle bacilli were found. Thereafter patient grew brighter and would occasionally sing, but would not talk and had to be tube-fed. The knee-jerks, normal on admission, were later lost (September, 1906).

The patient died May 4, 1907, about 14 months after onset of physical failure.

ANATOMICAL DIAGNOSIS (E. E. Southard).

Cause of Death.—Thrombosis of left common iliac vein and vena cava (unidentified organisms).

Chronic Conditions.—Malnutrition. Ascites. Hypertrophic cirrhosis of liver (2260 grams). Chronic adhesive pleuritis (both upper lobes). Bilateral phthisis pulmonalis. Bronchial lymph node tuberculosis. Brown atrophy of heart muscle. Slight mitral valvular sclerosis. Coronary arteriosclerosis. Chronic gastritis. Slight enlargement of right lobe of thyroid gland.

Recent Conditions.—See cause of death. Edema of left leg. Fatty changes in liver and kidney. Acute perisplenitis (extension from pleural process).

Nervous System.—"Brain weight 1105 grams. The cerebral hemispheres show no variety in consistence and suggest a slight softening of post-mortem origin. The convolutions are everywhere of the usual richness and appearance except that the upper two-thirds of the postcentral gyri appear narrower than normal, being scarce two-thirds the width of the precentral gyri. It is impossible to make out on section that the underlying white matter is firmer in the postcentral than the precentral gyri. The limits of this lesion cannot be made out exactly, and the lesion probably represents an anomaly of the postcentral gyri. Basal ganglia not remarkable. Weight of cerebellum, bulb and pons, 145 grams. The olives have the consistence of those of a normal brain. The right dentate nucleus is firmer than usual. There is a suggestion of thinning out of the laminæ in the clival and cacuminal regions.

Middle Ears.—Normal.

Spinal Cord.—Shows an increase of consistence in the lumbar region, and several segments at various points seem to show a thinning out of the anterior halves without, however, demonstrable diminution in the area of cross-section."

CASE VIII.—J. O., D. S. H., No. 10862, Path. No. 1294. Female, 37, married, housewife. Born in Lynn, Mass., of Irish parentage. Was a case of mental disease, possibly dementia præcox, paranoid type, of six years duration.

Heredity.—Facts not known.

Previous History.—Patient was married at 23 and had four children, three girls and a boy. Nineteen days after the birth of the last child, which took place normally, except that both legs had been swollen, patient became noisy, thought she was dying and asked for the priest. She was carried to Lynn Hospital and was there excited and had auditory hallucinations. The left leg had swollen much worse 10 days after birth of child.

Upon commitment to D. S. H. June 5, 1902, this leg was still swollen and the skin scaling. The patient was confused and suspicious, at first tractable, later resistant, occasionally listening to imaginary voices, stating "they seem to speak from my hand." Delusions were sometimes somatic. When

asked what was the trouble with her, "It is like little bits of formed children. It makes me nervous." Pointing to the physician's note-book, she said, "That is not saints' work." Periods of violence with biting, kicking and scratching would alternate with quiet and agreeable periods. Food was refused. Ten days later the patient had become somewhat better and developed some insight, and about a month after admission was apparently recovered from hallucinations. Removed upon a visit by her husband, the patient again became depressed, apprehensive and confused. Heard "rap-pings" at night. Patient stated, "These things I am telling you are all lies, but I have got to say them, because I have that feeling and cannot explain. I feel as though someone was compelling me to go through with it. This person has a grudge against me." There was considerable variation in the development of hallucinations. Patient spoke of queer doings going on at the hospital and talked about seeing "four generations" walking out of the dining-room. Exceedingly active hallucinations developed again in November, 1902, and patient broke glass to reach her husband, who was being crucified. Patient became resistive, violent, profane; would then relapse into depression and confusion. Food was refused as unnecessary. In February, 1903, patient had become dull, would talk little, was occasionally resistive.

March 9, 1903, said, "When the sandbags came on the ward for the old lady with the fracture, the Lord said even the sandbag liked her because she had sandbags at the Lynn Hospital, and she used to go to the beaches too." Occasionally talked in a grandiose way about being St. Johanna. Occasionally struck patients without provocation, and would frequently run the length of the ward for no apparent reason. Patient often spoke of herself in the third person and often knelt in an attitude of prayer. While walking attempted to touch every tree. Patient began to refuse to dress and take care of her room. Conversation became loose and contained many meaningless phrases: "Why did you come here? You hear me and you know my reports as a queen. Yes, I am the queen of England. I was known as Mrs. Page in the hospital. The carriages and horses are all in my name. Do you deny it, Johnnie? Who do you mean? Nothing new. I have all my money invested. I have my own rights and places up there."

In 1907 the patient was transferred to the tuberculosis ward and there died December 14, 1908. Toward the close of life, knee-jerks had been exaggerated. There was apparent amnesia, and only partial orientation could be demonstrated.

ANATOMICAL DIAGNOSIS (A. H. Peabody and M. M. Canavan).

Cause of Death.—Phthisis pulmonalis and tuberculous enteritis with ulceration.

Chronic Conditions.—Malnutrition. Slight ascites, hydrothorax, and edema of ankles. Hydropericardium. Slight chronic fibrous endocarditis. Chronic obliterative pleuritis (right). Chronic apical pleuritis (left). Ovarian atrophy. Erosion of cervix. Tuberculous ulceration of colon. Enlarged lymph nodes near cecum and along aorta. Cavitation of left

upper lobe. Disseminated tuberculosis of right lung. Enlarged bronchial lymph nodes. Calvarium dense. Slight chronic external adhesive pachymeningitis.

Acute Conditions.—Acute nephritis.

Nervous System.—Slight chronic leptomeningitis with adhesions at frontal and temporal tips. Brain weight 1120 grams. Generalized increase of consistence of cerebrum (especially frontal and occipital), pons, and cerebellum.

CASE IX.—J. W., D. S. H., No. 14591, Path. No. 1298. Female, 36, married, housewife. Born in Dracut, Mass., of Irish parentage. Was a case of dementia præcox, katatonic type, of about nine months duration.

Heredity.—Negative. One brother and one sister died of tuberculosis.

Previous History.—Healthy as a child. A good student, disposed to quick temper. Married at 25. Miscarriage at five months, followed by three boys and a girl. Became nervous and run down at 34 years.

Present Illness.—Onset of pain in right side about April 1, 1908. Several weeks later patient dropped her work complaining of "physical incapacity and pain in the chest." Insomnia and brooding followed and in June patient complained of having tuberculosis, but said she could not get well. After a vacation she began in August to worry more. She was once disposed to jump out of a window and several times stated that relatives were trying to cut her up. She feared poison in her food. There were spells of looseness of bowels followed by constipation.

Patient was committed to D. S. H. October 6, 1908. Partially adherent lobules of ears. Slight hypertrichosis of upper lip. Gothic palate. Teeth in poor condition. Atrophy of breasts. Expansion of right lung less than that of right. Slight resistance of passive movements. Upon admission patient chiefly lay in bed as a rule with her eyes full of tears, moved very slowly and expressed the idea that every one was trying to hurt her. Patient's emotional reactions were very slight, although stating that deep palpation of the abdomen hurt her. Her expression gave no signs of pain. Although describing fear of being hurt, she gave no further evidence of fear. At first appeared depressed and retarded, she later improved. Had a spell of untidiness, became more active, gave irrelevant replies, and showed inertia suggesting dementia præcox. The diagnosis of manic depressive insanity, depressed phase, was first made, largely based on retardation in conversation and movements. In the middle of December, 1908, patient again became untidy and sat on floor; showed certain physical failure. Her conversation was limited largely to "I want to go home." Without definite proof of tuberculosis, she was placed in the building for tuberculosis, and there showed restlessness, negativism, a tendency to pulling bed clothes from other patients and untidiness. There were several slight rises of temperature. January 7, 1909, patient had a severe generalized convulsion, after which time she lost weight, became unable to speak and to swallow easily. She mentioned slight headache in the last few days of her life. Death January 16, 1909.

ANATOMICAL DIAGNOSIS (M. M. Canavan and C. G. McGaffin.)

Cause of Death.—Ileocolitis with ileac ulceration. Infection of cerebro-spinal fluid with organism resembling bacillus of fowl-cholera.

Chronic Conditions.—Malnutrition. Sacral and trochanteric decubitus. Teeth poor. Gastropnoia. Chronic perisplenitis. Chronic periappendicitis. Chronic adhesive apical pleuritis. Slight chronic parietal endocarditis. Mitral valvular sclerosis. Small vegetation of aortic valve. Slight aortic sclerosis. Tuberculosis of apices. Slight cirrhosis of liver with fatty change. Chronic purulent cholecystitis. Laceration of cervix. Chronic external otitis pachymeningitis over vertex.

Acute Conditions.—Tumor of left kidney. Acute nephritis (pyelo nephritis?). Acute endocervicitis. Thrombus of left internal iliac artery. Ulcers of ileum. Infection of jejunum, ileum, colon and rectum.

Nervous System.—Pia faintly injected and adherent to dura over left middle frontal in an area 1 x 1 cm. in diameter, 16 cm. from tip of pole. Pia is raised from the brain by a clear fluid over the vertex region. Pia slightly cloudy over vessels, but strips from cortex smoothly. Hemispheres equal in size and in general slightly firmer than normal. The left second temporal convolution is more prominent than others of its side or the opposite temporal convolutions. The left precentral gyrus measures on mesial aspect 2 cm., left postcentral 1.5 cm. The right precentral measures on mesial aspect 5 cm.; the right postcentral 1 cm. Sulci around right postcentral gaping. Cut sections show the postcentrals to have faint and thin grey matter and their white matter shrinks from the knife. The ventricles are smooth. Ganglia normal. Basal vessels not notable. Sections of the brain show no further gross lesions.

Brain weight 1300 grams. Pons and cerebellum 190 grams.

Middle Ears.—Gasserian ganglia and cord not notable.

CASE X.—M. M., D. S. H., Nos. 2874, 11624, Path. No. 1303. Female, single, 55, compositor. Born in Peabody, Mass., of American parentage. Was a case of dementia præcox, observed in a terminal stage.

Heredity.—An uncle insane at D. S. H.

Previous History.—Patient was admitted to D. S. H. with diagnosis of chronic mania (duration six months) June 6, 1883, and was discharged unimproved to Salem Almshouse August 28, 1885. At 29 believed she was a clairvoyant; apparently had auditory hallucinations. Complained of pains in throat and constantly spitting blood. "Could feel other people's injuries." Excitement on admission; assumption of absurd attitudes and declamation. Disconnection on talk. Made mysterious mention of Masonic signs. More active delusions brought out by menstruation. Her delusions dealt chiefly with injuries brought upon others which she could feel. At Salem Almshouse the dementia advanced. She had a vagrant tendency and was resistive.

Upon second admission to D. S. H. January 4, 1904, patient showed a heavy growth of hair on chin and upper lip; a narrow high palate and slight arcus senilis. Exaggerated knee-jerks, continuous tremor of lips,

slight lingual tremor, inconstant tremor of hands, slight peripheral arteriosclerosis, and signs of aortic valve sclerosis. Mentally, patient talked disconnectedly in answer to questions. Failed to occupy herself in any way; wore an unchanging facial expression. Claimed to have been dead and reborn many times. Persistently stated that she bore another name than her own and showed an apparent defect of memory for both recent and remote impressions. Was unable to make her way about the ward. Sample of conversation: "We don't know whether it is Heaven or earth we are sitting in. The house feels such a move. It moved right along this morning like a train. You were marked when you came in." Do you hear voices sometimes? "I hear the occupants of another world." Do you have any thoughts? "When I read books." Do you read books? "Sometimes. I believe I am a baby with all these attacks." What attacks? "The attacks, points, and scoops." Are you out of your mind? "You have got to pray to God to get out of this building. My father told me I would be the Lord's wife. He told me to obey my husband and my Lord." How long have you been married? "I can't tell, a number of years. I have been a baby since I have been married."

Again, Why were you sent here? "Because I pushed the bed back and a bullet came through the wall. I was chewed and born and clambered and went through shambles." Why were you sent here? "Because there were so many thieves around." What did you do? "I started my nun work and read my Bible in my room, thank God and all God."

Patient at Middleton Colony restless and vagrant. In last few months the patient grew careless of dress and showed mannerisms, stereotyped movements, resistiveness and severe Bright's disease. Death February 16, 1909.

ANATOMICAL DIAGNOSIS (A. H. Peabody and C. G. McGaffin).

Cause of Death.—Chronic diffuse nephritis and acute bronchitis.

Chronic Conditions.—Malnutrition. Slight sacral decubitus. Aortic valvular sclerosis (foci of calcification). Slight aortic sclerosis. Coronary arteriosclerosis. Dilated stomach. Chronic diffuse nephritis. Chronic perisplenitis. Mural and subperitoneal fibromyomata of uterus. Atrophy of ovaries. Calvarium dense. Exostosis of frontal bone. Adherent dura. Chronic tympanitis auris. Calcification in falx cerebri.

Acute Conditions.—Acute bronchitis. Slight enlargement of mesenteric lymph nodes. Abrasions of forehead and left hand.

Nervous System.—Brain weight 1220 grams. Chronic fibrous leptomeningitis of vertex, along sulci at base of brain and over cerebellar cisterna. Generalized increase of consistence of brain. Pigmentation of cerebral grey matter.

CASE XI.—E. F., D. S. H., No. 13582, Path. No. 1310. Female, 28, single, mill operative. Born at Manchester, N. H., of Scotch-Irish parentage. Was a case of dementia præcox probably of hebephrenic type, possibly, originally imbecile. The total duration of the dementia præcox features was perhaps four years.

Heredity.—Facts unknown. Insanity in family denied.

Previous History.—Patient always of subnormal mental capacity. "Peculiar, stupid, and ugly." Dull and backward at school. Worked steadily in a mill, but never saved money. Was sullen and cranky. At 24 years irritability, indolence, untidiness, aimless wandering and increasing silliness set in. A tendency to gluttony. The police often picked her up on the street at night.

Patient was admitted to D. S. H. April 5, 1907. Adherent ear lobules. High arching palate. Acne eruption. Gait peculiar, at times normal, at times patient swings one foot in front of the other and totters back and forth (mannerism?). Occasionally turns and twists her fingers about in a stereotyped way, touching objects with finger tips. Knee-jerks exaggerated. Patient smiled and grinned, was untidy, and habitually lay in bed with clothes over her head. Patient mute except on repeated questioning, when an occasional "yes" or "no" could be elicited. Later patient became more tidy and again untidy. Patient was apparently not oriented while in hospital and showed amnesia and defective impressibility.

Developing fever in November, 1908, she was transferred to the tuberculosis building, where she grew weaker and died March 22, 1909.

ANATOMICAL DIAGNOSIS (C. G. McGaffin and N. B. Burns).

Cause of Death.—Phthisis pulmonalis.

Chronic Conditions.—Malnutrition. Unequal pupils. Asymmetry of thorax. Marked mitral sclerosis. Hypertrophy of left ventricle. Hydro-pericardium. Chronic adhesive pleuritis of anterior portion of left lung. Tuberculosis, with cavitation of left lung, and slightly of right lung. Enlarged bronchial lymph nodes. Chronic passive congestion of liver. Dextroflexion of uterus. Thyroid gland small. Cyst of left Fallopian tube.

Acute Conditions.—Thrombosis of left auricle, staphylococcus septicemia.

Nervous System.—Gliosis of both frontal regions. Atrophy (or aplasia?) of left postcentral gyrus. Left precentral gyrus broader than right. Brain weight 1300 grams.

CASE XII.—M. C., D. S. H., No. 12143, Path. No. 1317. Female, 44, single, mill operative. Born in Ireland; father English, mother Irish. Was a case of dementia præcox of paranoid type of 21 years standing.

Heredity.—Father intemperate.

Previous History.—Patient a woman of ordinary mental capacity. Limited education; of melancholy and reserved tendency. Attack began at 23 with insomnia and anorexia, followed later by auditory hallucinations, fear, desire to become a nun, and wandering tendency.

On admission to D. S. H., October 25, 1897, the diagnosis of primary dementia was made. Patient was resistive, repeating, "Oh, my God protect me." Had auditory hallucinations and various delusions, sometimes religious. Mutism, refused to eat, restlessness, later increased stupidity, untidiness, and troublesome activity. In 1890 patient was able to work in the laundry, but in 1893 became quarrelsome and violent, often laughed in

meaningless fashion and could not be prevailed upon to answer questions. Removed to Lawrence Almshouse June, 1893.

Recommitted to D. S. H. August 31, 1904. Patient sat about idly talking to herself or laughing in a silly manner and if permitted would wear four or five aprons. Her speech was peculiar and babyish and many replies were in whispers. Disorientation was apparently complete. Memory for recent and remote events was poorly preserved. Grimaces and various mannerisms. Patient would for long periods sit about listlessly and then become talkative. At times patient became quarrelsome; noisy at night and resistive.

Cancer of left breast was noted in July, 1908. Operation November 30, 1908. Had no effect on mental state. Death from metastases May 19, 1909.

ANATOMICAL DIAGNOSIS (A. H. Peabody and M. M. Canavan).

Cause of Death.—Multiple metastatic carcinomatosis.

Chronic Conditions.—Inequality of pupils. Edema of ankles. Brown atrophy heart muscle. Slight coronary arteriosclerosis. Chronic peritonitis. Chronic adhesive pleuritis. Lateral misplacement of uterus. Chronic gastritis. Surgical removal of left breast (carcinoma). Carcinoma of axillary lymph nodes, left lungs, bronchial lymph nodes, and liver.

Acute Conditions.—Icterus. Hemorrhagic conjunctivitis. Hemorrhagic endometritis. Acute nephritis. Hypostatic pneumonia.

Nervous System.—Adherent dura. Chronic fibrous leptomeningitis, along sulci. Cervical spinal cord firm. Brain weight 1210 grams.

CASE XIII.—M. K., D. S. H., No. 14597, Path. No. 1319. Female, 31, married, mill operative. Born in Ireland. Was a case of dementia præcox of the paranoid type (possibly imbecile) of eight years duration.

Heredity.—Sister epileptic.

Previous History.—Poor scholar and truant in convent school in Ireland. House work and mill work after coming to America at 15. Married at 18; three children, followed by separation. Illegitimate child at 23. An attempt at suicide is asserted at 23-24. History before commitment is limited. Insomnia and street-walking are reported.

Commitment to D. S. H. October 10, 1908. Slight coarse tremor of fingers and tongue. Patient dull and apathetic. Lay quietly in bed looking at one point on ceiling as if hallucinated. Orientation imperfect. School knowledge and calculating ability deficient. Memory somewhat impaired for remote events; still more impaired for recent events. It later transpired that she could see the Virgin Mary at any time. Patient at times sang religious strains. Muscular movements were in general slow and languid. She was apt to assume attitudes suggesting those of saints in religious pictures. Once she betrayed a fear that men were after her. In January, 1909, she had become at times resistive and fearful. She was tube-fed several times. At times patient stated that she had a bad taste in her mouth.

Died May 28, 1909, of colitis.

ANATOMICAL DIAGNOSIS (A. H. Peabody and M. M. Canavan).

Cause of Death.—Acute follicular colitis.

Chronic Conditions.—Malnutrition. Inequality of pupils. Edema of ankles. Ascites. Chronic adhesive pleuritis, left. Chronic fibrous pericarditis. Chronic fibrous endocarditis. Aortic sclerosis. Tuberculosis of left apex. Chronic perisplenitis. Renal arteriosclerosis. Chronic diffuse nephritis. Slight cirrhosis of liver. Chronic endocervicitis. Calvarium dense.

Acute Conditions.—Acute nephritis. Acute jejunitis, ileitis and colitis. Acute proctitis. Acute vaginitis.

Nervous System.—Cervical spinal cord large. Slight chronic leptomeningitis especially basal. Brain weight 1250 grams.

CASE XIV.—F. O., D. S. H., Nos. 8471, 13648, Path. No. 1335. Male, 32, single, shoemaker, born in Lynn, Mass. Father born in Massachusetts; mother born in Nova Scotia. Was a case of dementia præcox, katatonic type, of 20 years duration.

Heredity.—Paternal grandfather alcoholic.

Previous History.—At 12 years an attack of confusion and more or less unconsciousness lasting two weeks. Pains in back and head at intervals for years. At 18 years spells of laughter and boisterousness, delusions of being mesmerized, elation and depression spells, insomnia, threats of violence and suicide.

On commitment to D. S. H., October 23, 1896, patient was talkative and expressed numerous delusions and pseudoscientific theories. "The moon is the blind eye of some animal. There is a change every thousand years, so the men of a thousand years ago are now women, and *vice versa*. The reason why the Egyptians are so small is because he put vitriol into them a thousand years ago, and it is all described in the inscriptions. He has the shoulders of an Egyptian, the head of Napoleon or an Italian, and his limbs are French. We are all being continually acted upon by minerals, herbs, electricity, and magnetism, and one person's brain acts directly upon another's."

The physical condition was well maintained. There was a progressive apathy, with occasional noisy spells and unprovoked assaults on patients. In 1898 assigned historic parts to officers: head supervisor was Mrs. Grover Cleveland, superintendent was Napoleon, the pathologist was Daniel Webster, etc. Much profane, obscene and foolish talk.

Later, patient was habitually found mumbling and laughing foolishly on a settee. Eczema of buttocks and scrotum from dribbling of urine. Dysentery in September, 1904. The urine then began to show albumin.

Patient's apathy occasionally gave place to excitement, denudative spells, and the expression of extravagant delusions.

Transferred to Foxboro State Hospital March 5, 1907. Readmitted to D. S. H. May 10, 1907. Untidy, manneristic, with tendency to hold fixed positions. Placed in tuberculosis building in 1908, where he had spells of noise-making. Diarrhœa set in in July, 1909, but there was no blood or

mucus in the stools. Toward the close, patient could not keep a straight line in walking. Patient's characteristic position was similar, lying, standing, and walking, and consisted in a curled-up stoop with arms folded over abdomen.

Death suddenly, after a gradual exhaustion, August 21, 1909.

ANATOMICAL DIAGNOSIS (M. M. Canavan and A. A. Hornor).

Cause of Death.—Phthisis pulmonalis. Intestinal obstruction.

Chronic Conditions.—Malnutrition. Dilatation of pupils, oval from above downwards. Scaling and pigmentation of skin. Chronic focal adhesive peritonitis. Chronic adhesive apical pleuritis (left). Hydrothorax (right). Heart small (145 grams). Slight chronic fibrous endocarditis (left ventricle). Tuberculosis of apex of left lung. Tuberculosis with cavitation of right lung. Liver weight 940 grams. Cystitis and prostatitis. Slightly adherent dura. Chronic tympanitis auris (left).

Acute and Recent Conditions.—Intestinal obstruction. Acute jejunitis and ileitis. Mesenteric lymphnoditis. Acute nephritis.

Nervous System.—Spinal cord small. Chronic leptomeningitis along sulci of vertex, in Sylvian fissures, and at base of brain. Thrombi of superior longitudinal and left lateral sinuses.

CASE XV.—M. D., D. S. H., Nos. 10098, 10580, Path. No. 1358. Male, 24, single, shoemaker. Born in New Brunswick of Irish-Canadian parentage. Was a case of dementia præcox, katatonic type, of 10 years duration.

Heredity.—Unknown. Orphan.

Previous History.—Two years before commitment, malaria with refusal to talk (patient's statement). Normal to 15 years, of average school capacity. Ten days before commitment patient had spells of crying, jumping, shouting, and incoherent talk, with refusal of food for about a week. Patient believed he had appendicitis. Urine was drawn with catheter four or five days before commitment. Headache during two nights before commitment.

Commitment D. S. H. September 15, 1900. Nose asymmetrical. Malnutrition. Depression explained by patient as due to lack of sleep, having no mother and lack of appetite. Patient was dazed and bewildered, refused food, was at times normal, later mute, untidy, resistive. The katatonic symptoms then diminished, and patient could be got to take food. Periods of mutism and fixed attitudes alternated with brighter and more responsive periods. Late in 1900 he had become apathetic, but worked in the dining-room, occasionally noisy and mischievous. Tonsillitis in March, 1901. Weight and physique had in general much improved. Active symptoms then almost wholly ceased, and patient was discharged April 1, 1901.

After discharge, patient worked well in shoe shop and drove team acceptably to employers. On being taken to learn a trade in Boston, August, 1901, he stayed but two weeks, and returned erratic, boastful, profane, threatening, and was recommitted October 12, 1901, in approximately perfect physical health.

As a rule surly and profane, patient was sometimes tractable (November

1901; February to July, 1902; September to January, 1903). Occasionally untidy. Often restless, sleepless, and annoying to helpless patients. A second attack of follicular tonsillitis September, 1902.

April, 1904, confusion, peculiar way of putting on clothes, swaggering about, mutism or incoherent responses to questions, facial grimaces, twitching of facial muscles. November and December, 1904, orderly and tractable, though apathetic, correspondent with an attack somewhat suggestive of typhoid fever (positive Widal reaction in second week).

During 1905 and 1906, patient was apathetic, idle, properly oriented, and had very good memory.

In the spring of 1906 patient grew depressed and unwilling to eat, became untidy, mumbling, and disoriented, and during July and August became restless, excited, given to running about making peculiar movements and assaulting helpless patients. A period of quiet dulness followed.

Patient's weight increased; he was given parole privileges.

In February, 1909, patient grew despondent and untidy, often refused food, and took to continual praying. In August dysentery set in, with persistent diarrhoea; mutism and occasional prayers.

Sudden collapse set in on November 18, 1909. Death. Patient mumbled a few words to physician on day of death.

ANATOMICAL DIAGNOSIS (H. M. Adler and M. M. Canavan).

Cause of Death.—Acute ulcerative ileocolitis (bacillary dysentery).

Chronic Conditions.—Malnutrition. Unequal pupils. Trochanteric decubitus. Chronic appendicitis. Chronic obliterative pleuritis (right). Obsolete tuberculosis of left apex. Chronic perisplenitis. Chronic gastritis. Cystitis (thickened wall). Calcification of lymph node near pancreas. Calvarium thick. Slightly adherent dura mater.

Acute Conditions.—Acute ileocolitis. Enlargement of mesenteric lymph nodes. Acute bronchitis (right). Acute splenitis. Fatty changes of liver and (slight) kidneys.

Nervous System.—Sclerosis of left inferior frontal gyrus. Brain weight 1200 grams. Slight chronic fibrous leptomeningitis. Lumbar spinal cord soft.

In seeking for correlations in these data, let us first inquire how many of the lesions described can safely or probably be regarded as congenital anomalies or lesions acquired long prior to mental change. For a proper judgment here we shall need to take into account not merely the lesions in question, but the total clinical and anatomical impression presented by each case.

I, 840. A woman of Irish extraction, a capable school-teacher for 13 years, developed at 35 after over-work, a depressed, delusive, languid state, upon which typical katatonic symptoms shortly supervened, and died of phthisis at 37. Possibly the brain was somewhat atrophied, but not visibly so, save in the frontal regions. Although visible generalized atrophy cannot be asserted, there was a palpable generalized gliosis. (*Acquired.*)

II, 991. A Nova Scotian carpenter, given to frequent masturbation and later to excess in venery, developed a mental disease at 24 variously diagnosed in different State hospitals as "hypochondriacal paranoia," "chronic melancholia," "neurasthenia," is said to have threatened suicide, complained of pain, abnormal sensations ("brain and legs whirling round"; "I can't speak, because it pulls down and up and wound around me"—making motions from abdomen to neck), was hypochondriacal, eventually answered only in monosyllables, developed tuberculosis and died at 35. Slight generalized cerebral gliosis, without visible atrophy. (*Acquired.*)

III, 1034. An Italian immigrant, for 10 years a shoe operative of average capacity, somewhat easily affected by alcohol, developed at 33 auditory hallucinations and persecutory delusions, later grew dull, reticent, given to impulsive acts, and then showed echopraxia, cerea flexibilitas, mutism, at times automatism; died of pulmonary gangrene at 35. A kind of simian hirsuteness and hypoplasia of heart and aorta perhaps suggest "degeneracy." The pupils also were unequal and one was oval. The brain of this case was of good weight, and the solitary lesion it showed was a sclerosis and pigmentation of the dentate nuclei of the cerebellum. (*Acquired.*)

IV, 1062. An Irish housewife, who had borne three children, was deserted by her husband and developed at 28 somatic delusions, depression, and suicidal tendencies. On commitment signs of tuberculosis of both apices were discovered, which tuberculosis was fatal 10 years later. Full of delusions, abusive, noisy, obscene, the woman never showed katatonic signs unless reticence and a single period of mutism can be so interpreted. The brain of this case was of proper weight and showed palpable gliosis (without visible atrophy) of the superior frontal, prefrontal, and orbital gyri. At death (38 years) the genitalia were already atrophic. There was an aberrant thyroid. (*Acquired.*)

V, 1137. An Irish shoe operative (father possibly alcoholic) developed loose delusions of influence and a little later peculiar motions and gestures, mutism, stereotyped movements. All these symptoms, except mutism, ceased in later years. The total process lasted 15 years and the man died at 35. As in Case II, both heart and aorta were small. One testis was atrophied. The brain weighed 1465 grams and showed a striking microgyria of the right parietal lobule. Whether this lesion is acquired or aplastic would be hard to decide on anatomical grounds, but there was a focus of chronic pial change in the adjacent parieto-occipital fissure. There is a suggestion of sclerotic changes in the frontal regions and the lower surface of the cerebellum. (*Acquired? Congenital??*)

VI, 1149. A carpenter, hyper-religious, and given to spiritualism, perhaps never "just right," has episodes of auditory, visual, olfactory, and gustatory hallucination (possibly also tactile), but during a quiet course of 32 years eventually settles into habitual, apparently voluntary, "communications" with God. Certain tremors, of doubtful interpretation, partly voluntary, were at one time evident in reflex tests. Characteristic mannerisms were

late in appearing (55 years) and were then slight. Death at 57. The brain showed a generalized increase in consistence (without visible atrophy) and especially firm occipital regions. There was no palpable sclerosis of the frontal regions, but there was a regionary chronic leptomeningitis. (*Acquired.*)

VII, 1168. A French-Canadian woman, of normal development and a weaver for four years, after desertion by lover, developed auditory hallucinations, persecutory delusions, certain subjective sensations, and resistivism, later apathy, mutism and less of knee-jerks. Death four years after onset, at 24 years. The brain weighed 1105 grams and showed an atrophy (or aplasia) of both post-central gyri, a mild sclerosis of the right dentate nucleus, and possibly other slight chronic cerebellar lesions. (*Acquired, Congenital?*)

VIII, 1294. An Irish housewife, who had borne four children, developed swelling of both legs at her fourth confinement and 19 days after birth of child became boisterous, fearful of death, and had auditory hallucinations—thrombosis of left leg had set in. Auditory hallucinations, delusions of suspicion, and periods of violence gave place to virtual recovery. At home recurrence of hallucinations, followed in the hospital by violence, resistiveness, refusal of food, later apathy. Impulsive movements, frequent genuflexion, employment of third for first person, stereotyped movements. Death after six years at 37. Generalized slight cerebral sclerosis, especially frontal and occipital. Slight focal leptomeningitis, frontal poles and tips of temporal lobes. Atrophy of ovaries. (*Acquired.*)

IX, 1298. An Irish housewife, who had borne four children, developed pains, insomnia, ideas of suicide, fear of tuberculosis, delusions of poisoning. On commitment, hypertrichosis of upper lip and atrophy of breasts had set in. The palate was Gothic. The symptoms first suggested the depressed phase of manic-depressive insanity. Apathy, negativism, untidiness, followed a severe generalized convulsion nine days before death (nine weeks after onset, 36 years). Brain of proper weight. Atrophy (or aplasia?) of postcentral gyri. Gliosis of left second temporal gyrus. (*Acquired? Congenital.*)

X, 1303. A woman compositor of New England parentage (uncle insane) believed at 29 that she was clairvoyant and apparently had auditory hallucinations as well as somatopsychic delusions, possibly based on hallucinations. Apathy, peculiar autopsychic delusions toward death, carelessness in dress, mannerisms, stereotypy, resistiveness. Course of 25 years. Death at 55. Generalized increase of consistence of brain, with pigmentation and a chronic leptomeningitis of the vertex, along sulci, at the base, and over cisterna cerebellaris. (*Acquired.*)

XI, 1310. A Scotch-Irish mill-worker, a woman always of subnormal mental capacity, developed at 24 a pronounced change of character with hebephrenic features. In hospital mannerisms or peculiarities of gait, certain mannerisms of finger movements, and virtual mutism. Unequal

pupils. High palate. Asymmetry of thorax. Death at 28. Small thyroid gland. Frontal lobe gliosis. Atrophy or (aplasia?) of left postcentral gyrus. (*Acquired, congenital?*)

XII, 1317. Woman, mill-worker (father alcoholic), at 23 had insomnia, followed by auditory hallucinations, fear, religiosity, vagrancy. In hospital, resistive, hallucinated, delusive, mute, refusing to eat; later violence. Finally apathy, with manneristic speech and grimaces. Death from carcinomatosis, 21 years after onset. Occipital microgyria. Chronic leptomeningitis along sulci. Cervical spinal cord firm. (*Acquired.*)

XIII, 1319. High-grade imbecile. Irish mill operative. Sister epileptic. Mother of three children and a fourth illegitimate. One attempt at suicide. Eight years' course with onset at 23. Religiosity. Could see Virgin Mary at any time (hallucination rather than delusion). Imitation of saints' attitudes as seen in pictures. Possibly gustatory hallucinations. Death at 31. Unequal pupils. Cervical spinal cord unusually large. Slight leptomeningitis, especially basal. (*Acquired and congenital.*)

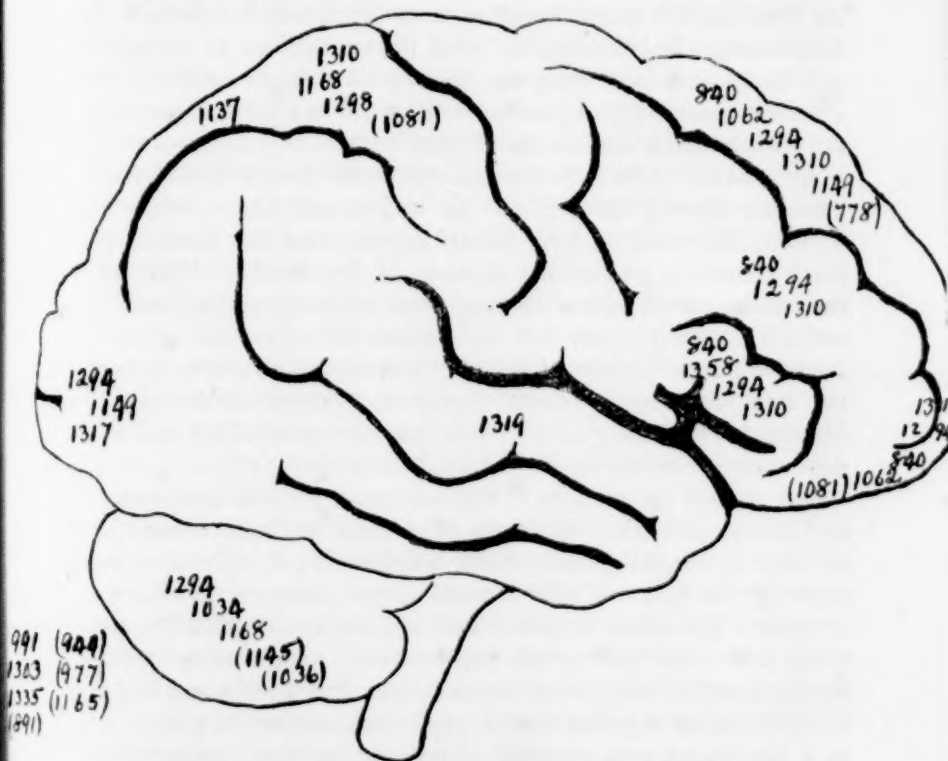
XIV, 1335. Shoe operative. Attack of doubtful character at 12 years. Paranoid symptoms began at 18. Katatonic symptoms gradually supplanted the paranoid. Death at 32. Spinal cord unusually small. Brain weighed 985 grams, but was apparently not to any great degree atrophied. Heart (145 grams) and liver (945 grams) also small. (*Congenital.*)

XV, 1358. Irish-Canadian, shoe operative. Onset at 15. Katatonic, later apathetic, then apparently recovered (seven months after onset). Recurrence four months later. Remarkably periodic course. Death at 24. Palpable sclerosis of the left inferior frontal gyrus. Slight chronic fibrous leptomeningitis. (*Acquired.*)

One's superficial judgment, therefore, concerning the origin of the lesions in question is that they took rise in the adult brain in 840, 991, 1034, 1062, 1149, 1168 (at least in part), 1294, 1303, 1310 (at least in part), 1317, 1319 (in part), 1358=12 cases, possibly also in 1137, 1298=maximum of 14 cases. So far as 1335 is concerned (Case XIV), it might well be doubted whether the hypoplastic nervous system formed more than a nidus for the mental process; perhaps this case should be put in the macroscopically normal group.

It is but fair to insist, on the other hand, upon the congenital features. Besides 1335, 1137, 1168, 1298, 1310, 1319, gave rise to a suspicion of congenital features in the nervous system alone =6 cases. And, if we add anatomical features outside the nervous system, then 1034 (hirsuteness, hypoplasia of heart and aorta) 1062 (aberrant thyroid) might be added=a maximum of eight cases probably or possibly in part provided with congenital features.

It appears, accordingly, that, although congenital features are not absent from our group, there is strong color for the provisional judgment that numerous acquired lesions of the nervous system exist in our series.



FOCAL ATROPHIES, APLASIAS, OR SCLEROSES IN DEMENTIA PRÆCOX.

() indicate microscopic evidence only.

THE PRE-ROLANDIC GROUP.

The frontal region was specially marked out for injury (whether acquired or congenital is for the moment not considered) in cases 840, 1062 and 1358; was prominently injured also in 1294 and 1310; and obviously shared to some degree in the generalized mild injury which was macroscopically made out in 991, 1135, 1303, and in 1335 (unless this brain be regarded as showing hypoplasia of congenital origin), i. e., in at most nine cases.

Consider first the three cases in which the macroscopic lesions specially affected the frontal region. 840 was at first paranoid, then shortly katatonic. 1062 was paranoid, perhaps never katatonic. 1358 was a katatonic case with remarkable remissions. At first sight it seems hopeless to seek clinical correlations in these cases. But, bearing in mind the conclusions of Campbell and Brodmann concerning the histological differentiation of the so-called frontal region into subdivisions, it is clear that we cannot demand close clinical correlations here.

As a matter of fact, the lesions of 840 (the case with paranoid-katatonic course) involved, so far as eye and finger could determine, the *whole* of both frontal regions, and the whole brain itself showed a generalized increase of consistence. Whatever the relation of the patient's brain disease to her symptoms, there is not the slightest doubt that the patient had been subject to a sclerosing brain disease of mild but generalized character during the last years before death (assigned duration three years). Microscopically, the gliosis of this case was generalized and not demonstrably severer in the infrastellate layers.

But, though the changes of 840 are too severe and wide-spread and the symptoms too mixed for correlation, the same is not true of 1062 (paranoid, perhaps never katatonic). A woman of the same age as 840, but with a much longer assigned duration of symptoms (11 years or more) and with alcoholism clouding the issue, 1062 had maintained proper brain weight and showed gliosis confined (so far as macroscopic examination could determine) to the superior frontal, prefrontal, and orbital gyri, *i. e.*, to a continuous area probably containing but two histologically separate cortex-types. It is perfectly true that microscopic examination shows a degree of the same process (gliosis, satellitosis) in other regions, so that here again the brain cannot be freed from the suspicion of a generalized change. Still both macroscopic and microscopic examinations seem to prove that the superior frontal and prefrontal cortex is subject to the most severe and possibly to the oldest process of injury. It becomes, therefore, at least a working hypothesis for this case to consider the paranoid symptoms as related with lesions in the superior frontal and prefrontal regions.

But what kind of interpretation is left open for the purely kata-

tonic case, 1358? The analysis of this case is still far from complete. The greater part of both frontal regions was, as a matter of fact, wholly spared from macroscopic lesion. Only the left inferior frontal gyrus was affected, presenting an induration of an isolated and distinct, though mild, character in the midst of an otherwise apparently normal brain (slight general leptomeningitis). What relation, if any, this particular lesion bears to the katatonia of this (clinically somewhat unusual) case, is impossible to say; but it is certain that the data of 1358 do not controvert in any respect the correlations suspected for 1062 (the practically pure paranoid case) or even for 840 (a clinically more rapidly progressive and mixed case), as the macroscopic distribution of the lesions indicates.

The other frontal lobe cases deserve brief mention. The distribution of the lesions in 1294 is in consonance with the progressive paranoid-to-katatonic character of the disease: the case resembles in some respects 840 (just considered); but its duration is longer (six years) and the katatonic symptoms were much delayed in their development. The brain had undergone a mild generalized sclerotic process (widely distributed gliosis microscopically) which had especially affected the frontal and occipital parts of the brain and included the cerebellar cortex and even the pons. The frontal tips actually showed a few pial adhesions (a rare event outside of general paresis and other exudative or post-exudative lesions). The extent of this prefrontal process again recalls 840; but the whole case is obviously too complex, progressive, and longstanding to permit more than a suspicion of the course of cortical events.

1310 is best considered below among complications of the post-Rolandic group: it showed both delusions and katatonic symptoms, but was at first pronouncedly hebephrenic.

The group of generalized glioses (without defined gross atrophy) here considered numbers three. One of these (991) was practically paranoïdal throughout its 11-year course, and, as a matter of fact, microscopically showed a marked superior frontal lobe gliosis (with satellitosis); but the case is clinically not too clear, and no deductions need be risked therefrom.

Another generalized gliosis, 1303, was apparently the end-stage of a hebephrenic, with a disease of 25 years' duration. Cor-

relations are impossible. Histologically, there were marked gliosis and satellitosis, especially of deeper layers.

1335, the last of this group, is very possibly an instance of hypoplasia or of arrested development of the brain. The brain at autopsy weighed but 985 grams (heart 140 grams, liver 940 grams). Correlations here also are difficult.

Before dismissing the pre-Rolandic group, 1149 may be considered in this connection. I have placed 1149 provisionally in the post-Rolandic group largely on the basis of the well-defined occipital gliosis; but the brain showed a generalized sclerosis (microscopically marked, with some degree of satellitosis in places). The reason for possibly including it, more especially, in the frontal group is the occurrence of chronic fibrous leptomeningitis, confined to the superior frontal gyri. The case was clinically a supreme example of a paranoid dementia præcox of 32 or more years' duration, and with certain katatonic symptoms appearing very late in life.

The above sketch of the features of the pre-Rolandic group leaves us with the suspicion that paranoid cases begin with lesions striking especially the frontal tips and the superior frontal gyri. Cases with katatonia supervening later and with a progressive course of greater duration show involvement of other regions or even of the whole brain.

THE POST-ROLANDIC GROUP.

(a) Cases 1137, 1168, 1298 and 1310 (also frontal) form a sub-group which might, perhaps, be termed sensory-perceptual.

(b) Cases 1149 and 1317 are cases of occipital lesion, 1319 of superior temporal lesion.

(a) The postcentral-superior-parietal or sensory-perceptual group of cases claim attention as exhibiting lesions in a region doubtless of great importance in interpretation of sensory impulses. All four of the cases were alike in developing katatonic symptoms.

1137 began, it is true, with a delusion, but a peculiar one (electrification), possibly due to sensory misinterpretation: thereafter the patient developed katatonia, demented seriously, and died (15 years' duration). The visible atrophy (or aplasia) in the right superior parietal region, accompanied by microgyria and a dense

local deposit of fibrous tissue, formed a striking local lesion. At the time of death, however, gliotic changes with satellitosis had become widespread. Purposely I avoid discussing whether the focal lesion is acquired or congenital and what its pathogenesis may be, since for the time being the topographic distribution of such lesions is the important consideration.

1168 showed at autopsy what looked like a bilateral anomaly—a hypoplasia of both postcentral gyri in their upper two-thirds. The onset in this woman occurred at 20 after desertion, and katatonic symptoms were admixed with persecutory delusions and subjective heat-sensations almost at the start. The course was katatonic thereafter.

1298 pursued an acute course of katatonic character with death after nine months. The brain showed, besides double postcentral gliosis in the white matter and visible atrophy of the right postcentral gyrus, a peculiar focus of duropial adhesions over the left middle frontal gyrus. This case was at one time diagnosed as depressed phase of manic-depressive insanity.

1310 appears clinically to show a marked imbecilic strain. Perhaps the left postcentral atrophy and the precentral inequalities are largely of congenital derivation. The frontal gliosis is consistent with the imbecilic or hebephrenic cast of the case. Numerous katatonic features developed.

The sensory-perceptual sub-group, as represented by these cases, shows lesions which lead to the suspicion, if not the proof, of congenital anomalies. Symptomatically these cases have katatonic symptoms in common.

Post-Rolandic group (b). 1149 and 1317, as well as 1294 (discussed with the pre-Rolandic cases), belong to an occipital group.

1149 was briefly mentioned in the frontal connection above, because the prominence of the frontal region (which could not be differentiated on palpation from the remainder of the sclerotic brain) was emphasized by a local frontal leptomenigitis. In point of fact the occipital regions were more markedly sclerotic than the rest of the brain. The case might be asserted to present a beautiful instance of anatomoclinical correlation, were we to insist on the relation between the occipital gliosis and the well-defined, constantly recurring, voluntarily executed visual episodes

("communications with God"). Obviously, such a superfine correlation would mean running a good horse too hard. Those "communications" must have involved numerous cortical events outside the occipital region. It seems safe to maintain, however, that, granting some agency exerting a mildly destructive or irritative effect upon the occipital region, a useless mental habit like these "communications" would probably assume a visual coloring. The existence of disease in a given brain-region may well be conceived to determine the course of events in the intact remainder. The histological examination of this case is incomplete, but I conclude from available sections that the calcarine cortex-type is relatively intact, whereas the common occipital cortex-type exhibits much more marked gliosis and satellitosis. In this early phase of our problem, it seems best to rely upon coarse and well-defined qualitative distinctions rather than the cell-enumerations which later work will demand. I judge from recent comments on cortex-architecture that the occipitocalcarine relations will be the most vulnerable point of attack in this direction.

1294, which has been discussed above, also exhibited similar histologically demonstrable variations in the intensity of lesions in the calcarine and occipital regions (common occipital type more markedly affected in the infrastellate layers). As a matter of fact, however, in 1294 the hallucinations shown were auditory rather than visual (though the patient once broke glass to reach her husband being crucified). The brain showed frontal, cerebellar, and pontine gliosis, in addition to the occipital. No temporal gliosis was made out macroscopically, but there were foci of leptomeningitis, both at temporal and at frontal tips.

1317 again breaks down in anatomoclinical correlation much as does 1294, since, despite the occipital microgyria, the hallucinations, so far as was made out clinically, were auditory. There were some religious delusions.

With respect to relative developments of paranoid and katatonic features in this occipital sub-group, it has been pointed out that 1149 was a classical paranoid case with a few katatonic symptoms toward the close of life (32 years' duration). 1317 was more doubtful but probably can be interpreted as mainly paranoid; katatonic symptoms developed late in a course of 21 years. 1294 was paranoidal.

If we compare the sensory-perceptual group (a) cases 1137, 1168, 1298 and 1310 with the occipital group (b) 1149, 1317 (1294), we cannot but be struck with the predominantly katatonic character of group (a). The physiological correlations between katatonic symptoms and the sensory-perceptual field are briefly mentioned in Chapter V.

INFRA-SYLVIAN GROUP.

I have provisionally placed but one case, 1319, in this group, a paranoid case, probably upon an imbecilic basis. There are no striking anatomoclinical correlations in the case. This group will undoubtedly grow with further experience. 1294, *e. g.*, showed focal leptomeningitis of the temporal tips.

CEREBELLAR GROUP.

It is noteworthy that the cases which we procure at autopsy in dementia præcox are provided as a rule with multiple lesions. This is particularly true in the advanced cases, where interpretation may be difficult by reason of the fact that gliosis has overtaken the brain as a whole. This difficulty reappears in the cerebellar cases.

1034, however, is a macroscopically pure case of sclerosis of the dentate nuclei of the cerebellum. Clinically 1034 was a classical example of *cerea flexibilitas*, in an Italian of 35 years, who began with paranoid symptoms (feared anarchists), and in less than six weeks became typically katatonic. Microscopic examination shows in various areas of the brain a gliosis which had escaped palpation in the gross. Some of the areas of intracortical alteration were undoubtedly far too small to attract attention macroscopically. There was a slight satellitosis of the frontal region. The case appeared then, like many other cases of this series, microscopically not so definite as the data of palpation had indicated.

1168 is a case which has been briefly mentioned in the sensory-perceptual sub-group of the post-Rolandic cases as showing a hypoplasia of both postcentral gyri in their upper two-thirds. In addition thereto there was a sclerosis of the olives, of the right dentate nucleus of the cerebellum, and of the cacuminal and clival portions of the cerebellum. This case was classified as hebephrenic, but mutism, resistivism, assumption of fixed attitudes and

impulsive rocking movements give rise to the suspicion that katonomic features cannot be excluded. A congenital element is also very possible from both history and brain findings.

A third case, 1143, showing almost the same findings in the brain has been excluded from the group of typical dementia præcox cases but might be included upon a more liberal interpretation of symptoms.

Other cases would have to be added to this group on the score of serious microscopic alterations, which were made out in the face of protocols to the effect that the cerebella were macroscopically normal. The group is, therefore, actually much larger than the two cases (1034 and 1168) would indicate.

PROVISIONAL GROUPING OF 14 CASES WITHOUT RECORDED GROSS LESIONS.

I have analyzed in some detail the cases with recorded minor gross lesions and anomalies to the number of 15. There are 14 outstanding cases having a clear clinical title to the diagnosis of dementia præcox, but in which no gross lesions were recorded. It is of interest to learn what light a microscopic examination will throw upon these cases and whether any cases are subject to a tentative topographic grouping.

There are several cases about which there is no doubt that they actually belong in the gross lesion group. Thus 1145 should, perhaps have been excluded altogether from this study since the protocols were mislaid. Ample block material exists, however, which microscopically shows characteristic satellitosis of the deep cortex-layers and a marked gliosis of the dentate nuclei (more marked left than right). This case might well be placed in Table XVII above, as well as in the cerebellar group.

1145. 10705. F. 37. paranoid. 6y. Brain wt. 1185.
(Pregnancy at origin.)

I am sure also that with increasing experience, case 1036 would have become an accession to the gross list in the cerebellar group. A sketch of this case was presented by the writer in 1907 in his study of the granule layer of the cerebellum.² 1036, 11317, M. 28, hebephrenic, 6y; cardiorenal, renal 6+y; brain 1175g.

778, a paranoid case upon an imbecilic basis, I should desire to place (with some trepidation) in the superior frontal group. The

reason for this is that the superior frontal gyri, far more than other regions examined, gave evidence of a sclerotic process: considerable gliosis of the underlying white matter, superficial gliosis of rather focal character, and perhaps a slight generalized gliosis of the whole gyri, with infrastellate satellitosis. That the process was not confined to this region is true, and neuroglia cell mitosis was a curious finding in the right precentral gyrus. The paranoid features had come on two years before death at 41 in this imbecile. Very possibly the case scarcely belongs with dementia præcox as usually conceived; but it seems certain that a similar process has begun in the tissues.

1081, a suicide, can with some confidence be placed in the postcentral sub-group, if only by the evidence of the stained sections which demonstrate a marked inequality in the two postcentral gyri. After considerable search, a focus of gliosis and satellitosis was found in one of the orbital regions. This case, a good instance of a hebephrenic with onset at 18 and suicide at 45, shows how a minor lesion—anomaly or acquired lesion, it would not be safe to say which—can be overlooked at autopsy. Had not the postcentral gyri been sectioned in coordinate places and had not the orbital gyri been sectioned, this brain might well have passed into the "normal" group both macroscopically and microscopically.

1208 is a case described by Ayer and the writer in 1908,²⁸ in which the gross findings are so altered by the effects of a suicidal attempt and by terminal metastatic brain abscesses that a judgment concerning essential lesions of dementia præcox is difficult. The case should perhaps be excluded from the whole series on the ground of complications.

So excluding 1208, we arrive at the judgment that 15 cases in which gross lesions were actually described, together with four cases in which (in all conscience and with greater experience) gross lesions *should* have been observed, our total of gross lesion cases would run to 19 in 28 (the chosen uncomplicated 29 cases minus case 1208). This result would mean that gross lesions—focal atrophies and aplasias, and a few focal and diffuse glioses without visible atrophy—are found in 68 per cent of a series of typical dementia præcox cases, from which have purposely been previously excluded all instances of frank arteriosclerotic and coarsely wasting processes.

impulsive rocking movements give rise to the suspicion that katonian features cannot be excluded. A congenital element is also very possible from both history and brain findings.

A third case, 1143, showing almost the same findings in the brain has been excluded from the group of typical dementia præcox cases but might be included upon a more liberal interpretation of symptoms.

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It seems strange that such a high percentage of visible and tangible lesions should have escaped attention, if this Danvers series is at all typical of dementia præcox in general. I am sure that in many laboratories the brains of autopsied cases fail to get intensive study until after long immersion in formaldehyde solution, which obliterates (or by distortion perhaps conceals) minor size-differences in gyri. Moreover, anatomists, familiar with sculpture anomalies of such relatively plastic organs as the liver, kidney and spleen, are inclined to dismiss cerebral anomalies of sculpture as of the same minor order of interest. Again, the careful palpation of the cerebrum and of the cerebellum is not duly practiced in all laboratories, nor are blocks for microscopic examination chosen on the basis of such intensive inspection and palpation of the brain as careful work demands.

Our own experience has shown how difficult it may be to keep one's house in order for intensive work. Eight cases are outstanding in which notes of gross lesions are missing. Of these eight, four show in certain regions characteristic gliosis and satellitosis (891, 944, 977, 1165). The other four (794, 806, 873, 1006) have so far proved refractory to our efforts to show stratigraphic alterations.

The result is that 24 out of the chosen 28 cases show either gross and microscopic lesions or microscopic lesions alone, *i. e.*, 86 per cent.

V. THE TOPOGRAPHIC IDEA IN THE STUDY OF DEMENTIA PRÆCOX AND ALLIED CONDITIONS.

The eternal hope of the neuropathologist is the hope of showing visible "changes" in the nervous system in the functional psychoses, and not only *in* them but *of* them. All insanity, we hear on every hand, is really nothing but brain disease, and, if our technique were only better, we should be able to point out the particular brain-changes which are responsible for insanity. I was assured by an enthusiastic psychopathologist that these brain-changes are actually so certain to exist that we should not waste our time looking for them.

There are reasons which make this equation:

Insanity = brain-disease

really erroneous. In the first place, certain psychiatrists to the

contrary notwithstanding, modern work has shown that the equation should better read

Insanities = brain-diseases,

and in the particular form

Some insanities = brain-diseases

perhaps we should be inclined to accept at least the spirit of the statement.

Ever since the doctrines of Flourens were overthrown, from the days of Hughlings Jackson and Hitzig down to the era of the topographers (Campbell and Brodmann, for example), it has been known that the brain is a complex of organs. The brain has parts. Yet those authors who assert that insanities are diseases of the brain are as a rule quite silent as to the brain-*parts* involved. The brain as an organ of mental disease is for these authors really the old Flourens brain, having interchangeable parts like a liver or a kidney.

The only justification for this view of which I am aware is the sound idea that the brain, although its parts are not homogeneous and interchangeable, still works in a certain integrated, organized way, and, when disorder and disorganized workings of brain-elements supervene, then mental diseases appear. Thus Wernicke supposes that

insanity = disease of the association elements of the brain.

This is a definite advance upon older conceptions, at all events in clearness. I suppose no one doubts the conceivableness of a mental disease based upon such transcortical lesions of association fibers as Wernicke supposes. But few would be so bold as to generalize the transcortical-injury idea²⁸ to cover the great bulk of mental diseases.

Even in the field of aphasia, one observes with recent writers a tendency to replace the focal-destruction theory with some theory more consonant with modern ideas as to the tremendous breadth, and complexity of the cortical areas subtending speech. From the psychological and logical side comes a vigorous plea from Wundt²⁹ against the fashionable focalizing of the speech functions in specified areas.

Thus a curious situation develops. On the one hand, the topographers, both physiological and histological, are demonstrating

more and more the extreme delicacy of subdivision which exists in the brain-cortex, as elsewhere in the nervous system, so that one gains the idea that perhaps no parts of the brain are functionally interchangeable, save by re-education. On the other hand, logicians and critical workers are calling a halt upon the focalizers and denying some of the most classical and approved localizations. These latter objections are brought with the more force against the localization of a complex function like speech, which savors of the old faculty-psychology and contains a *soupeçon* of phrenology.

I believe we should be even more critical concerning the structural foundations of mental disease. Suppose we grant that any mental symptoms you please, *e. g.*, delusions, hallucinations, negativism, *cereæ flexibilitas*, have a cerebral origin, is it necessary to suppose likewise a cerebral disease, as a basis therefor? Yes, some would reply, a cerebral disease, but not necessarily structural, perhaps functional only. Even the latter escape I should be tempted to forbid.

Consider diabetes mellitus. The glycosuria has in one sense a renal origin. But it would be a mistake to consider diabetes mellitus a renal disease, structural or functional. I believe that the brain permits certain mental symptoms to develop and purveys these symptoms, much as the kidney of a diabetic permits and purveys glycosuria.

Similar considerations hold with respect to the purveying of convulsions by the brain, an account of which I presented in a paper on the mechanism of gliosis in epilepsy. Neither a convulsion nor a katatonic impulsive movement nor the clenched fist of a thug is adequately explained by lesions of the muscles involved, by lesions of the motor nerves or spinal cord, by activities in the precentral gyrus, or even necessarily by any post-Rolandic or pre-Rolandic brain mechanism or combination of mechanisms. Perhaps, indeed, the reason lodges back of the central nervous system: the convulsion might have been a phenomenon of reflex epilepsy due to intestinal worms, even the katatonic movement might conceivably prove a normal and proper reaction to some received stimulus, and the thug's brain might have been quite "normal" while engaged in permitting asocial acts for whose source one should seek far afield.

On such grounds it has not seemed certain to me that mental disease is necessarily brain disease or that, were we able to inspect thoroughly all brain-parts, we should necessarily discover "changes" therein in mental disease. Perhaps the thyroid or the pituitary glands might induce mental symptoms without inducing brain "changes," over and above the proper physiological changes going on in any brain-part during the execution of its normal function. We might be forced to look into the thyroid for the cause of some mental diseases, just as into the pancreas for that of a diabetes mellitus.

A priori, therefore, it has not seemed to me at all necessary that diseases like manic-depressive insanity or dementia præcox (to use Kraepelin's nomenclature) should exhibit, even theoretically, brain-changes. One was especially disposed not to conceive brain-changes of a universal character, such as the universal liver changes in phosphorus poisoning, as underlying these diseases. No doubt there are instances of such universal brain-change and no doubt mental symptoms occur as a consequence. Hyperpyrexia might serve as an example. General paresis, however, our paradigm in this field, despite the severe and widespread brain changes which characterize it, is still an example of a disease of focal character. From its protean and progressive character, a theoretically similar focality for brain lesions in dementia præcox was thought probable. The mild, irritative and persistently complex character of many symptoms in dementia præcox seemed to argue very mildly destructive or irritative lesions, such that an occasional definite cure or disappearance of a given symptom or set of symptoms could be effected by removal of irritating factors or by advancing destruction of the offending elements.

If these contentions were sound, it became clear that no random block of brain tissue could demonstrate the nature of dementia præcox, as a particular block of lung tissue might demonstrate that of pneumonia. Neither would all the cells be equally or peculiarly affected nor would the cells of certain strata do more than demonstrate the effects of disease in those strata.

But, if the cells or strata of no random block of brain tissue could serve as a test of dementia præcox, would not particular and happily chosen blocks, or even ideally possible total-brain

sections suitable for cytopathology, solve the problem. I suppose all would agree that such work might solve the problems at least of localization and possibly of pathogenesis in dementia præcox, provided that the disease is really a brain disease.

I therefore began to study all cases of dementia præcox accessible to me (the protocols and prepared sections from the Danvers collection made in Prof. Barrett's service and my own), to get a general view of the subject. As will be seen, I at first included with type cases also cases only doubtfully belonging in dementia præcox, and these I have excluded from the conclusions of this report, although many exhibited lesions which might well serve, if we were surer of our conditions, to bring the cases back into the group.

The histopathology, although studied in connection with many of the lesions, has been left in the background to avoid involvement in a tangle of discussion concerning intracortical reflex-arcs.

CONCLUSIONS.

1. Existent evidence for the organic nature of dementia præcox is not wholly convincing, since (a) the cytological changes described are found also in cases of toxic deliria and in cases complicated by severe visceral disease, and (b) the stratigraphic changes described are found also in certain senile cases without characteristic symptoms of dementia præcox.
2. Resort must, therefore, be had to the topographic idea, for the adequate exploitation of which total-brain sections, with cytological exploration of *all* areas, are ideally necessary.
3. Random blocks of brain tissue with demonstration of satellitosis, infrastellate gliosis, or disintegration products of cell disorder will throw little light on the mechanism of dementia præcox.
4. The data of the functionalists (dissociation, sejunction, intrapsychic ataxia, and the like) are of the utmost importance as indicating the essential focality of the pathogenic process and the focal variations in its severity.
5. The curability of certain cases, the remissive character of some cases, the speedy disappearance of particular symptoms, the persistent complexity of reaction in some instances, the absence of characteristic severe projection-system symptoms, all indicate

that the process is histopathologically mild and that the focal changes found will be but slightly destructive or even irritative (in the sense of slight injuries readily repaired or compensated for).

6. Grossly destructive lesions of a transcortical character in Wernicke's sense might conceivably effect, *e. g.*, a permanent katatonic complex and doubtless will be found to do so occasionally; but the protean and progressive character of dementia præcox will exclude such transcortical injuries from playing a large part in the pathogenesis.

7. The focal lesions to be sought for will doubtless escape macroscopic notice in many instances, since the volume of apparatus engaged in effecting very prominent symptoms is often slight and spread very thin in numerous areas.

8. Studies of the "soft brain" and of gliosis in epilepsy have proved, however, that even comparatively slight degrees of cortical gliosis can often be palpated at autopsy.

9. Palpable glioses of a focal or variable character, combined in numerous instances with visible atrophy and microgyria, have been found in over half the series under examination, in cases regarded as clinically above reproach and *not* subject to coarse wasting processes, focal encephalomalacia, cortical arteriosclerosis, or diffuse chronic pial changes.

10. The frequent co-existence of several foci of sclerosis or atrophy in the same brain and the microscopic observation of milder degrees of nerve-cell disorder and gliosis in regions without gross lesions tend to the conception that the agent is more general and diffuse in its action than would seem at first sight, so that future research may well demonstrate that certain instances of coarse brain wasting and even of diffuse chronic leptomeningitis belong in the group (microscopic corroboration necessary for assigning values to focal variations).

11. The microscopic examination of the residue of cases in which gross lesions or anomalies were not described shows the same tendency to gliosis and satellitosis in numerous instances and the same tendency to focal variations from gyrus to gyrus exhibited by the gross lesion group. These findings suggest that the minor gross lesions and anomalies of several cases actually escaped notice (the protocols, though drawn up with a certain

system, are by various hands) at autopsy, so that the probable actual proportion of gross lesions is 68 per cent. If microscopic evidence is resorted to, the "organic" proportion in our series rises to 86 per cent.

12. Several groups of cases were classified from the distribution of macroscopic lesions, although the focal purity of these cases can often be brought in question from the results of microscopic examination (infrastellate gliosis and satellitosis also in macroscopically "normal" areas).

I. Pre-Rolandic group, including a superior frontal-prefrontal sub-group of paranoid trend (*cf.*, *e. g.*, case 1062).

II. Post-Rolandic group, including (a) postcentral-superior-parietal (sensory-perceptual) sub-group in which katatonic features are the common factors (*cf.*, *e. g.*, case 1298); (b) occipital sub-group (*cf.* case 1149).

III. Infra-sylvian group (too small for clinical correlations).

IV. Cerebellar group (katatonic features).

13. If these data find general confirmation, they will doubtless go far to unify discussion, since mild, variable and progressive intracortical lesions, proceeding at different rates in different parts of the apparatus, and having the peculiar distributions indicated above, would explain adequately some of the contentions of the dissociationists, while remaining not wholly inconsistent with Kraepelinian ideas.

14. The frontal-paranoid correlation is in line with modern physiological ideas, but it must be granted that the occipital and temporal regions, as elaborating important long-distance impulses, may well play a part also in paranoid states.

15. The cerebellar-katatonic correlation is doubtless in line with some contentions of the Wernicke school, and obvious comments might be made in connection with the proprioceptive functions of the cerebellum (Sherrington).

16. The postcentral-superior-parietal relations to katatonic symptoms are perhaps theoretically the most novel suggestion from the work, but here again the results are not inconsistent with modern physiology.

17. The topographic study of dementia præcox brains, both gross and microscopic, is commended as likely to shed new light on the pathogenesis of certain symptoms, notably paranoid and katatonic symptoms.

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REPORT OF THE COMMITTEE ON MEDICAL EXPERT
TESTIMONY OF THE AMERICAN MEDICO-
PSYCHOLOGICAL ASSOCIATION.*

In the torrent of comment and contention which has long been raging about medical expert testimony, there has been thus far no concerted expression of opinion from the alienists of this country who are the chief targets for the adverse and widespread criticism that prevails on this subject. It is time, therefore, that the position of this Association on this question in its various aspects and particularly as it relates to the insanity defence in criminal cases should be clearly defined, and the difficulties under which the alienist labors and the injustice done him made plain.

This is the tenor of the resolution which led to the appointment of your committee and in this report and the accompanying resolutions we have undertaken the very difficult task of so presenting the issue that it shall represent the united opinion of this Association in so far as it bears on the attitude and position of its members.

The number of alienists who figure in homicide trials or for that matter in medico-legal cases of any description is insignificant when compared with the cloud of medical witnesses giving expert testimony in cases arising from personal injury which are largely responsible for the flood of litigation which is overwhelming our courts. Many of these witnesses also are general physicians whose opinions are not based on special accomplishment in any single branch of medicine. Therefore, there necessarily must be far more opportunity for defective medical testimony to be offered in such cases than during criminal trials in which the question of insanity is involved.

Nevertheless it is the physician in mental diseases whose evidence has to bear the brunt of public criticism and abuse because of the importance of the issue and the wide publicity given to

* Presented at the sixty-sixth annual meeting of the American Medico-Psychological Association, Washington, D. C., May 3-6, 1910.

details of murder trials of which his testimony is a conspicuous feature. The physician who is called to testify on purely medical or surgical questions is brought into no such prominence. On the other hand, all eyes are on the alienist and so great is the indignation and desire for retaliation on the murderer that except in the most obvious cases of insanity any medical testimony which favors irresponsibility is sure of hostile scrutiny from the start no matter how sound and unbiassed it may be.

The alienist on the witness stand faces, therefore, a great responsibility and a single dishonest physician may bring more discredit upon himself and his medical brethren because of this prominence than a dozen unscrupulous medical witnesses in accident cases. That this Association is fully alive to this responsibility is plainly shown by the number of its members who have long taken active part in directing attention to the "evils" of medical testimony in court and in seeking their remedy.

The dangers to the cause of justice that are supposed to lie in the insanity defence for crime are without question greatly exaggerated. Too much has been taken for granted and little or no inquiry made as to the actual results of its operation. There is no way by which we can approach a more accurate estimate of the number of homicidal criminals who have escaped their just deserts by this means than by ascertaining how many sane criminals of this class have been committed as insane to hospitals for the insane in a given period. In reply to inquiry on this point the superintendents of 75 out of 108 hospitals in this country and Canada, with a population of over 83,230 inmates, report but seven criminals who had been charged with homicide who had been improperly adjudged insane and sent to hospitals for the insane during the past two years. Superintendents of special institutions for the criminal insane report that very few criminals of any kind are wrongly adjudged insane and committed to their institutions—not a dozen in twenty years according to Dr. Lamb of the Matteawan institution for this class—while the period of hospital residence of discharged cases shows that they underwent a longer confinement as insane patients than would have followed had the same men been convicted and sent to prison.

The real injustice in this matter is that the insanity defence is not by any means employed as often as it should be. In other

words, much more harm results from *lack* of expert testimony than from its defects. There are far more instances of the commitment of insane persons to prison for want of preliminary examination and recognition of their mental condition than there are of the commitment of sane criminals to hospitals for the insane. Many so-called criminals are convicted and sent to prison only to be found insane and transferred to the asylum for criminal insane. Such patients are wholly out of place in prisons where they are not only stigmatized as felons and deprived of the proper and humane care that is their due, but are made worse by prison discipline, while the difficulty of enforcing prison rules in their cases greatly interferes with proper administration. Dr. Allison has reported that 53 per cent of 179 insane persons under his charge at the asylum for the criminal insane at Matteawan who had committed murder were received from prisons to which they had been sentenced for life. Their histories and the character and course of the disease showed that at least 40 per cent of such convicted cases were insane at the time the crime was committed. In many instances the fact of their insanity was not recognized at the time of their trial, but in others the plea was set up and failed. Wherever this matter has been made the subject of inquiry this has been the story in all large prisons and institutions in which the criminal insane are received both in this and in foreign countries. The lowest estimate from authoritative sources, and a most conservative one, is that ten insane persons are made convicts to one malefactor who escapes punishment on the plea of insanity.¹

In the important matter of the responsibility of the insane for criminal acts we hold that it is not the province of the alienist in the medico-legal cases to pass upon the legal or criminal responsibility of insane persons. That is a question for the judge or jury to decide. A medical man giving expert testimony has only to say whether or not in his opinion insanity is shown by the evidence. It is admissible, however, to call attention to the fact that insanity in the medical sense does not imply total irresponsibility.

The capacity of an individual to distinguish between right and

¹ MacPherson, a Scotch authority, believes that "hitherto the law has certainly erred on the side of severity and has hanged ninety-nine irresponsible persons for one responsible person who has escaped on the plea of insanity" ("Mental Affections," p. 374.).

wrong as a test of legal responsibility is in direct conflict with the laws of nature and hence unscientific and false in its application to the mentally unsound. The real questions for the jury to determine in cases of alleged insanity in criminal trials are:

1. Did the defendant at the time of the alleged crime have sufficient mental capacity to rationally appreciate the nature and consequence of the act he was committing and if so had he sufficient power of will to enable him to choose between doing and not doing it?

2. If he had lost the power of choosing with reference to the particular act was the loss due to disease, and not to "heat of passion" intoxication or other self-induced temporary mental disturbance?

The chief obstacle to accurate expert testimony encountered by the physician is the difficulty—often the impossibility—of obtaining all the important evidence that is procurable on both sides of the case. Without this an unqualified opinion of real value cannot be given except where the insanity (for example) of the accused person is plainly apparent. We shall of course be told that on the contrary even the medical man who only forms his opinion after he has examined the accused person and has heard all the evidence submitted in court will still be biassed in favor of the side which employs him, and that there lies the whole trouble. To this we can only oppose our conviction that with the majority of physicians the professional instinct outweighs partisan and mercenary considerations and that when they have all the data for a diagnosis at hand they will give as accurate and impartial an opinion on the witness stand as they would in any case occurring in their daily practice. Were this not so, we should be forced to conclude either that medical men yield more readily to pecuniary temptation than members of the other professions or that most men whatever their calling and standing in the community are not radically honest where a fee is concerned.

True reform in medical testimony does not in our opinion lie in a radical change in present methods of legal procedure. It is in the hands of the medical profession, and if physicians would cooperate in refusing to testify unless free access to all obtainable evidence on both sides should be forthcoming we should hear little of the shortcomings of the medical expert.

It frequently happens that the medical witness is debarred from making any examination whatever of the person accused or questioned. Counsel for the defendant may decline to have his client examined and will be sustained by the court. Not only this, but the medical man on one side may examine the person while the same privilege is denied the physicians called on the other.

Sometimes we are allowed neither a personal examination or the evidence on which to base our opinion, but are obliged to answer only a hypothetical question, a procedure which can bear no comparison with either as a means of ascertaining the truth. In spite of the utility and justice of the hypothetical question in the opinion of the legal profession, it can never find favor with medical witnesses. As a rule it is not at all what it represents to be, for to quote Ray—that master of medical jurisprudence—if the case put to the jury is precisely what appeared in evidence it is quibbling to call it a hypothetical case. If, on the other hand, a genuinely supposititious case is put to the expert the less it resembles the actual case the less will it enlighten the jury. However, nobody supposes that the hypothetical cases stated by counsel always represent cases that have actually occurred, for it is well understood that they may be merely a collection of such particulars as best suit the counsel's purpose. A true reform would be to confine the expert to the case in hand as revealed by the evidence and debar him entirely from giving opinions on hypothetical cases. But although there are signs that the hypothetical question is less generally utilized than was formerly the case we have little expectation that it will disappear from court practice. With persistence however we may reasonably expect that in its presentation to the medical witness the essential evidence on both sides will be included and a source of much humiliation to the testifying physician and deception of the jury be removed.

The advantages to come of consultation by the medical witnesses on both sides of a case are admittedly great, because directly in line with medical methods where a careful diagnosis is to be made and the real condition of the patient ascertained. We are therefore in hearty sympathy with the familiar sentiments of Sir James Stephen who says:

"If medical men laid down for themselves a positive rule that they would not give evidence unless before doing so they met in

consultation the medical men to be called on the other side and exchanged their views fully, so that the medical witnesses on the one side might know what was to be said by the medical witnesses on the other, they would be able to give a full and impartial account of the case that would not provoke cross-examination. For many years this course has been invariably pursued by all the most eminent physicians and surgeons in Leeds, and the result is that in trials at Leeds (where actions for injuries in railway accidents and the like are very common) the medical witnesses are hardly ever cross-examined at all, and it is by no means uncommon for them to be called on one side only. Such a practice, of course, implies a high standard of honor and professional knowledge on the part of medical witnesses, but this is a matter for medical men. If they steadily refuse to act as counsel and insist on knowing what is to be said on both sides before they testify, they need not fear cross-examination."

The bar has its duty as well and should oftener take the initiative in securing such consultations. The prosecution and defence should oftener come together and agree upon the experts to be appointed, who should then conjointly examine the prisoner, collect all obtainable evidence, and submit their report to counsel on both sides. Mercier in his work on criminal responsibility cites a famous case recently tried in Massachusetts¹ in which this method was pursued with most satisfactory results, the counsel on both sides agreeing to abide by the decision of the commission. "This," he says, "seems an eminently satisfactory way of determining this difficult question. The case is not withdrawn from the consideration of a court of justice, but is tried in the ordinary way, the only difference being that the jury have not to estimate the value of conflicting opinions but are guided to a direct conclusion by a unanimous medical report. . . . The consultation of experts could scarcely fail to approximate their opinions even if they eventually differed and I think the practice is well worthy of a trial."

We also strongly favor the appointment of commissions wherever possible. Cases of crime of minor degrees in which the question of

¹ Reported by Stedman in the American Journal of Insanity, Vol. LXI, No. 2, 1904.

insanity is raised have long been passed upon and their proper disposal effected by commissions appointed by courts and the practice is increasing. There is ample evidence to show that capital cases in which the plea of insanity is raised may also be passed upon by commission with equally good results and with full recognition of their graver aspects. It is a frequent practice in Massachusetts to refer such questions to a commission of alienists and the results have been most satisfactory. The chief objection to the commission is that no body of physicians is able to elicit from witnesses testimony that in amount and importance will equal that which can be brought out by direct and cross examination on the witness stand by able lawyers. There is much truth in this, but it is equally certain that the counsel's unfamiliarity with mental disease often leads him to miss or neglect vital points evidencing insanity or its absence which quickly occur to the alienist, and which are far more accessible in private than in the publicity of the court room. A commission, moreover, often saves the expense and other disadvantages of a trial, and should the case come to trial the testimony of the members of the commission would carry especial weight.

But even if the foregoing methods could always be employed the important requisite of a thorough examination of the prisoner might still be wanting. This is not unfrequently the case where the physician's opportunity for observing him is confined to occasional visits to the jail and would be wholly obviated if a period of constant medical observation could be substituted for it. We are therefore strongly in favor of hospital observation in such cases pending the determination of the subject's mental condition. This method has long been in very satisfactory operation in Maine, New Hampshire and Vermont, and is taking root in Massachusetts under recent enactments. It has many advantages. The daily and hourly habits and conduct of the person are under the close and constant observation of trained physicians and nurses. This is invaluable in cases having concealed delusions who may refrain for weeks and months from unburdening their minds to the examiners. Persistent feigning also can be far more easily and quickly detected under these conditions owing chiefly to the difficulty the offender experiences in keeping up the pretence of insanity uninterruptedly and consistently when he is closely

watched night and day. But it is especially advantageous in notorious capital cases. Here removal of the person from public notice to a hospital for observation is quite certain to be effective in silencing the popular clamor and sensational reports that usually attend such cases. The delay it involves also tempers public opinion as does the evident intent of thorough investigation that is shown in a term of hospital observation. There can be moreover no suspicion of bias attaching to the unpaid opinion of State medical officers and the State is also saved considerable expense. Moreover the testimony of a hospital physician when based on such abundant opportunity for study of the case usually carries more weight with court and jury than that of other medical witnesses. Finally, under this method shorter trials are the rule.

Much, we believe, would be gained by the restoration of the common law practice wherever it has been abolished which allows the judge to advise the jury in the decision of complicated questions of fact and to aid them in weighing and sifting evidence that is of a scientific or technical nature. Such a provision would be especially applicable to questions of insanity.

There are also more purely ethical questions which are of decided importance to the medical witness and the repute of the profession. It is, for example, a questionable practice for the physicians to take active part in a medico-legal case by advising with counsel in open court. By so doing he exposes himself to the charge of undue bias, his testimony is regarded as partisan by court and jury, and his attitude is out of keeping with professional dignity.

The acceptance of a fee contingent upon the outcome of a case is a most objectionable and indefensible practice. An unbiassed, independent opinion is practically impossible under these circumstances and the physician becomes an active partisan at once. His testimony is also valueless if he is forced to admit that his compensation depends upon the result of the case.

It is very desirable to establish some standard of qualification for the medical expert especially in cases involving the question of insanity. In no other branch of expert work is special training and experience more necessary in forming opinions of real value and yet it is a common occurrence in most states for physicians with little or no special knowledge of, or practice in, mental dis-

ease to qualify as experts. A step in this direction might we believe be made by the establishment in the various states of bodies of official experts designated by the higher courts any of whom could be called on to testify as experts by either party to a civil or criminal action without however limiting the right of parties to call other expert witnesses as heretofore. This plan, although falling far short of the desired end, should at least tend in the long run to lessen the number of incompetent medical experts.

In conclusion we offer for adoption the following resolutions which shall represent the attitude of the American Medico-Psychological Association on the question of medical testimony as it affects the alienists of this country:

Resolved: 1. That the proved rarity of wrong acquittals on the ground of insanity is the strongest evidence that the abuse of the insanity plea in criminal cases has been unwarrantably exaggerated.

2. That the insanity plea is not by any means raised as often as it should be, to prevent the frequent miscarriage of justice arising from the conviction and imprisonment of insane persons whose true mental condition has not been recognized.

3. That the abuses which have crept into the method of presenting medical expert testimony have been largely the result of established legal tests and procedures, although their correction does not require radical change in the laws.

4. That inaccessibility of the evidence on both sides of the case is the chief cause of defective medical testimony.

5. That whenever possible the medical witness should not testify unless he has had an opportunity to make both a mental and a physical examination of the person in whose behalf the plea of insanity is raised.

6. That we consider the hypothetical question as ordinarily presented to be unscientific, misleading and dangerous to medical repute and that the evidence on both sides should always be included in its presentation to medical witnesses.

7. That in all criminal cases absolutely equal rights should be accorded the medical witnesses for both the prosecution and the defence for the examination of the person alleged to be insane.

8. That in our judgment the judiciary should by legal enactment be allowed more latitude in enlightening the jury and enabling it to comprehend the nature and meaning of the medical testimony laid before it.

9. That we recommend as advisable the adoption wherever possible of the so-called Leed's method of preliminary consultation by medical witnesses on both sides of the case as to its status.

10. That we advocate a freer use of appointments of commissions by the court.

11. That a period of hospital observation of all persons committing crimes in whose defence the plea of insanity has been raised is by far the best method yet devised for securing impartial and accurate opinions, silencing popular clamor, avoiding prolonged and sensational trials and saving expense to the State; also that we advocate the enactment in every State of laws similar to those of Maine, New Hampshire, Vermont and Massachusetts, providing that such persons may be committed by the court to a State hospital for the insane there to remain for such time as the court may direct pending the determination of their insanity.

12. That it is the sense of the Association that it is subversive of the dignity of the medical profession for any of its members to occupy the position of medical advisory counsel in open court and at the same time to act as expert witness in a medico-legal case.

13. That we regard the acceptance by a physician of a fee that is contingent upon the result of a medico-legal case as not in accordance with medical ethics and derogatory to the good repute of the profession, and advocate the regulation of the practice by legislation.

14. That we are in favor of any legislation that will secure a definite standard of qualification for medical men giving expert testimony.

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Notes and Comment.

DR. PAGE'S ADDRESS.—“What Nurses Gain by Treating Insane Patients without Mechanical Means of Restraint,” is the somewhat cumbersome, but very definite title of the address of Dr. C. W. Page, the retiring superintendent of the Danvers State Hospital, to the graduating class of nurses of that institution. To those persons who were in the habit of reading the AMERICAN JOURNAL OF INSANITY 40 years ago the sentiments expressed in the address would seem little short of madness. It was then generally taken for granted in the United States and Canada that the only course to pursue with those insane persons who were not capable of self-control was to control them from without by mechanical means. It was asserted and believed that insane patients should be protected from themselves and from each other. Richard Gundry, of Ohio, in 1875; R. M. Bucke, of Ontario, in 1880; W. B. Fletcher, of Indiana, in 1886, and others showed the fallacy of these statements and soon demonstrated in a practical manner that mechanical restraint was not curative but rather increased and aggravated the mental manifestations. In fact it soon became evident, as the result of experience, that many of the worst characteristics of the violent, homicidal insane were directly traceable to the use of such means of restraint. With non-restraint came a conviction that insane persons should be treated as sick persons and their restlessness should be relieved by occupation, amusements, good food, fresh air and good careful nursing from trained and skilled nurses. The keeper and attendant disappeared and the nurse came into being. To advocate any other method of treatment would now be justly considered a return to the methods of the darker ages of psychiatry. It is, however, refreshing to read the address and to recognize how great an advance has been made in one or two generations. The tribute in the address to the nurses who have been trained in the newer method of caring for patients would have fallen upon dull ears and irresponsible minds then. Now they indicate very felicitously

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the change which has taken place in the point of view of the nurse towards her charge. He says, after referring to the prohibition of all mechanical means of restraint:

How, then, have you succeeded in managing patients? Those who have had practical experience in such hospitals know that you have not abdicated authority, but that you have discarded its more objectionable possibilities, and have appealed to a higher grade of authoritative expedients,—the authority of reason over unreason; the power of persuasion; of appropriate, soothing words; of genuine sympathy; of applied philanthropy; broad humanity, tact in its best sense.

The rules laid down for your guidance in this trying work were only general ones. Explicit directions calculated to meet the requirements of individual cases could not be successfully formulated in advance, because the personality of each patient varies and the personality of a given patient often presents a new phase. Besides the personality of the nurses differing each one from all others, in some particular or some degree, must in each case have a bearing upon the method employed.

Nine-tenths of all possible friction between you and your patients has been nullified by your avoidance of coercive measures and by establishing friendly relations with them upon early acquaintance. This good work has been helped on by always giving them time to understand your requests and an extension of time when necessary to comply with your commands, and by not insisting upon literal compliance with your request when ready obedience in a modified manner or sense accomplished the desired end. No doubt you have been taxed, and severely, at times, to retain control of a situation. On the spur of the moment, you have had to invent and adopt expedients for the purpose of distracting the attention of some patient verging on an outbreak of excitement or violence. By quiet dignity, a calm, positive manner and a firm, straightforward look you have been able to dissuade some deluded patient of hostile intention. You have had to supply those under your care with wholesome mental suggestions in such numbers and variety that the effort may be likened to an exercise in mental gymnastics. You have learned how worse than useless it is to use negatively expressed injunctions in attempts to alter a patient's evident purpose, or change a habit of dwelling upon depressing mental subjects. You have found that the expressions, "Don't do this, or that," "You must not, or shall not, do thus and so," intensify a person's attention upon the forbidden idea or intent, making it so much the more difficult for patients to act as you desire.

You have discovered the more efficient, the scientific, positive method by which to accomplish the desired ends; that of supplanting the distressing or dangerous train of thought by suggesting new topics for contemplation—avoiding painful attempts at extraction and depending upon successful substitution.

To habitually practice the better way requires presence of mind, active thinking, and all the wit a nurse can command. It also involves the most

efficient sort of discipline for the nurse, that of self-discipline. When tantalized, defied or insulted, the true nurse—imbued with the proper spirit of non-restraint—must suppress indications of ill-temper, must even learn to receive blows without a display of resentment.

You have had to give courage to the disconsolate, lend sympathy and endeavor to impart faith in a long list of melancholy victims, although your proffered assistance has seldom been appreciated. Fortunate indeed have you been did nature supply you with a large measure of optimism.

Honesty of purpose and expression on your part must have been your rule else your work has been of little value to the patients and less to yourselves. Falsifying to patients is a deplorable practice. Your altruistic sentiments have been fostered by interest in, and sympathy for, the unfortunates. You have diligently searched mental ruins for some vital spark that might respond to the sunny influence of sympathy.

Where superficial observation has shown only evidence of degeneracy, a closer study has revealed to you spots of goodness which by cultivation have so leavened the individual as to produce decided improvements.

Thus, in various ways, it has been necessary to measure your mental capacity against the patient's cunning and will so constantly that you have developed your full mental stature; that you are ready and willing to measure yourself at any time with any party it becomes necessary for you to meet. In dealing with the insane in a non-restraint hospital, you have had to depend largely upon your own mental resources. You have overcome trying, difficult obstacles because you have successfully drawn upon your own innate mental endowment. In this way you have evoked a latent capacity which except for the exigencies of the various cases you have managed, would have remained dormant, and perhaps indefinitely.

This process has been one of auto-education—education in the true sense of the term, drawing-out, developing, utilizing your natural talent.

In earning your diploma in this school, you have acquired an art which will promote your usefulness and success at every step in your future career.

I think all must agree that a nurse's training in a "non-restraint" hospital is a decided success in developing character and practical knowledge.

Indeed, I challenge anyone to name an established educational course which will in the same length of time, better develop a student's natural ability, and better fit one for practical success in life.

These are stimulating words to those who have learned to care for the insane by the true methods of nursing. Dr. Page could not have done a better service to the insane than he has done by pointing out the cardinal virtues of non-restraint. It is a matter of sincere regret to those who have watched the growing usefulness of the Danvers State Hospital to know that the guiding hand of Dr. Page has been withdrawn. May he enjoy the rest and quiet which he has so well merited!

EXPERT TESTIMONY AND THE REPORT OF THE COMMITTEE OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION UPON THE SUBJECT.—We are happy in being able to present in this number of the JOURNAL the report of the committee appointed at the Atlantic City meeting of the Association in 1909 upon the subject of medical expert testimony. The report will, in our opinion, be found to be a fair, unbiased and dispassionate treatment of the subject and one which will, we trust, be effective in working material reform in some of the methods pursued in the presentation of medical opinions in court, and in the employment of expert witnesses on medical questions.

We have said that the report is an unbiased one. The same could be said of it had the committee placed more emphasis upon the fact that in a large degree the matters which are most severely criticised in relation to medical expert testimony have largely to do with the method of selecting witnesses to give expert testimony and the manner in which such testimony is permitted to be given, and that in both these the legal profession is almost wholly at fault. We are not, however, questioning the wisdom of the committee in refraining from placing more definitely than it has, much of the blame for the existing state of affairs where it belongs upon the legal profession as represented both by the bench and the bar. Neither are we proposing to plead lack of guilt upon the part of the medical profession for as the committee plainly intimates much either in the way of commission or omission may be laid at its doors.

The twelfth in the series of resolutions offered by the committee touches upon a fault that is too often observed in those who appear as medical experts, occupying the position of medical advisory counsel in open court and at the same time acting as expert witness in the same case.

The medical witness who sits beside counsel who coaches him with questions intended often solely to catch or confuse the expert who has been called for the opposite side invariably gives to the court and jury an impression of partisanship which must largely diminish, if not wholly destroy, the value of his testimony. During the course of the examination of witnesses, lay or medical, expert witnesses may often desire to suggest questions to counsel which may bring out more clearly certain points upon which they may

desire information, but such questions alone should be put to counsel and, if possible, in a way that would show to court and jury their real purport.

Not only will the resolution concerning contingent fees be approved, but a clause might have been added deprecating the acceptance of retaining-fees, which certainly can but place the witness, who accepts such fees, in the position of a partisan.

The whole report deserves careful reading and will serve to define clearly the position of the American Medico-Psychological Association upon the question.

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Book Reviews.

Report of an Epidemic of Bacillary Dysentery at the Danvers State Hospital, Massachusetts, 1908. From the Laboratory of the Danvers State Hospital, Hathorne, Massachusetts. (Boston: D. C. Heath & Co., 1909.)

A study of an epidemic of bacillary dysentery which occurred during the summer of 1908 at the Danvers State Hospital, Massachusetts, has recently appeared.

It is possible in a large and well-managed institution, such as the Danvers State Hospital, to weigh more accurately the various factors which have been thought to play a part in the etiology of bacillary dysentery than can be done through the study of a disease in a larger and less limited community. In this investigation the regular staff of the asylum was increased by a number of specially trained workers from the Harvard Medical School. The whole subject is presented in several divisions, some of which have unusual interest.

The first comprises a statistical report of the epidemic. There were 1592 persons in the institution, including 1400 patients, 192 servants, attendants, nurses and physicians, during the summer under consideration. The epidemic began early in July, continued through August, and rapidly declined in September. There were in all 156 cases of dysentery, with 36 deaths, a mortality of 23.1 per cent. The cases were distributed pretty generally throughout all the wards of the hospital. Both sexes were about equally affected, although the mortality was naturally greatest among the weaker and bed-ridden patients. The duration of the disease varied from three or four days to two months, the average being about 12 days.

In the second division of the study the various possible and probable sources of infection are considered. This is, perhaps, the most valuable portion of the study. It is thought that the disease was probably not water-born, because the water-supply was unusually good, and the number of cases of dysentery in the town of Danvers, using the same water, was not increased over the average. The milk-supply as a source of infection, was eliminated, as the milk was found on examination to be of unusual purity, and there was no difference in the incidence of the disease between patients using milk and those not using it. The food-supply could hardly be the cause of the epidemic, as the same vegetables were supplied to a colony outside the asylum where the mortality from dysentery was practically nil. The possibility of the organisms being present in the sub-soil and being liberated by disturbance of it was also considered, but it was thought unlikely that this agency could have had much or any influence in causing the dis-

case, as it happened that the wards where the disease was lightest were near where the most trenching had been done and that the part of the grounds where the soil had not been turned was farthest away from the wards where the disease was most severe.

Two sources of infection were possible: One, a carrier of the disease introduced into the institution from without. A patient, who had probably recently suffered from dysentery, was admitted in June, became ill again with dysentery early in July, and died July 10. Secondly, intramural carriers are possible. Undoubtedly, there were occasional cases of dysentery in the asylum throughout the year. The epidemic, from either of these sources, may have developed under favorable conditions. The chief of these conditions seem to be: 1, hot weather; 2, house flies. Humidity, they believe, was not a factor. Hot weather favors the spread of dysentery because the viability of the bacillus is greater at this time and the number of flies is increased. Flies were particularly numerous in the institution during the height of the epidemic. These had access to the stools of the patients and also to their food, and in the opinion of the observers they were the most important factor in the spread of this epidemic.

Careful and systematic bacteriological investigations by the most approved methods were made of the stools of 17 typical cases. In 14 of these the dysentery bacillus of the original or Shiga type was isolated. The same organism was obtained from one out of five autopsy cases examined. The examination of the blood and cerebro-spinal fluid in three cases proved negative. The authors are of the opinion, therefore, that the prevailing organism of the Danvers epidemic was of the so-called Shiga type, and not one of the closely-associated mannite-fermenting bacilli. The sera of a large series, 115 dysentery patients, were tested for agglutination with stock cultures of the Shiga and Flexner-Harris types of bacillus dysenteriae. Eighty-one per cent of these sera gave positive agglutination reactions in the sense that they reacted with Shiga in 32 cases, with Flexner-Harris in 37 cases, or with both in 24 cases. Nineteen per cent, or 22 cases, were negative. Shiga agglutinations seemed to be more numerous at the height of the epidemic, while Flexner-Harris bacilli were more apt to be agglutinated over longer periods. It is suggested that the latter organism may be an occasional normal inhabitant of the intestinal tract.

A study of the leucocytes showed an initial increase in the total number until the fifth day when the normal limit was reached. The proportion of lymphocytes was slightly higher than normal from the fifth to the tenth day of the disease.

Pathology.—Careful pathological studies conducted in the fatal cases showed that the lesions found in the various organs other than the intestines could not be directly attributed to dysentery infection; the intestines were always somewhat congested and swollen, the large intestine being particularly affected. The minute points of hemorrhage noted were not associated with ulceration. Ulcers were present in about one-half of the

cases. Pseudo-membrane was found in about one-fourth of the cases examined. The most interesting pathological finding was the presence of minute thromboses of the small lymph and blood-vessels in the mucosa and sub-mucosa. This is due, the authors consider, to a primary necrosis of the endothelium produced by an absorption of toxin, either directly through the lumen or through the blood or lymph channels. Throughout the swollen mucous membrane a marked increase in fibrin formation was demonstrated. Clumps of bacteria similar to dysentery bacilli were found in the lumen of many of the infected vessels. They consider that the thrombosis with its secondary inflammatory changes may be the beginning of the intestinal ulceration. As the result of an attempt to correlate the clinical findings with the intestinal lesions, they conclude that a week is necessary for the production of ulceration, and after three weeks there is a tendency to heal. Pseudo-membrane formation may occur in eight to fourteen days. The toxæmic cases were more frequent in July, the ulcerative cases later in the summer. The mesenteric lymph glands were generally enlarged. These findings in general correspond closely to the pathological changes occurring in *dysentery infantum*. Special investigation was made of the nervous system in a number of cases, but no definite association could be traced between the nervous lesions and the dysentery infection.

Prophylaxis.—A number of important prophylactic measures are suggested as a means of checking the disease. Among these may be mentioned the isolation of the patient not only during the disease, but after recovery, or until the organisms are absent from the excreta; through the immediate disinfection of all excreta and soiled linen, efficient screening of the sick-room, kitchen and dining room, the removal of the common breeding places of flies, such as rubbish heaps and open privies, and the providing of special closed receptacles for manure and garbage.

The several workers who have united in the report of the Danvers epidemic can certainly have the satisfaction of knowing that they have produced one of the most valuable contributions to our knowledge of this devastating epidemic. A fairly complete bibliography is appended.

J. H. M. KNOX, JR.

Die Wassermannsche Serodiagnostik der Syphilis in Ihrer Anwendung auf die Psychiatrie. Von DR. MED. FELIX PLAUT. (Jena: Verlag von Gustav Fischer, 1909.)

The importance of the Wassermann reaction is being gradually recognized by the profession. It has rendered a great service to Neurology and Psychiatry and by this method we were enabled to settle the mooted question of the etiology of general paralysis and tabes. Furthermore, we are able to recognize the early stages of cerebro-spinal syphilis and differentiate it from obscure nervous conditions and brain tumors.

Dr. Plaut, a pupil of Wassermann, and one of the early pioneers in this line of work, has written an admirable book which contains an excellent summary of serum-diagnosis of syphilis and its relation to psychiatry.

results of his own personal investigations which he carried on in Berlin (under Wassermann) and Munich, and a complete account of the literature. The book is divided into seven chapters.

In the first chapter he gives a historical retrospect of the development and nature of serum diagnosis in syphilis. Plaut maintains that at present we are not in a position to explain the true biological significance of Wassermann reaction but offers the following conclusions: "(1) The Wassermann reaction for syphilis is a biologic specific antigen-antibody reaction; on the one hand the antibody has the peculiarity of reacting not only with the syphilitic antigen, but also with normal connective tissue constituents, and on the other hand, the antigen is closely related to lipid substances or is a specific albumin-lipoid combination. (2) The active substances of the syphilitic serum are not antibodies, but are substances which owe their origin to syphilitic infection and possess a chemical affinity for lipoids (toxins?). (3) In the Wassermann reaction specific and non-specific combination-processes go hand in hand."

In the second chapter he deals with the employment of the various methods in practice. The author adheres to the original Wassermann's test—using aqueous syphilitic liver extract as antigen, guinea-pig serum as complement, and artificial hemolytic rabbit's serum.

In the third chapter he discusses in detail the technic of the Wassermann reaction.

The fourth chapter contains a brief discourse on the clinical specificity of the reaction and declares most emphatically that the Wassermann test is only pathognomonic of syphilis and doubts the reliability of the results of those investigators who reported cases of scarlet fever, tuberculosis and other infectious diseases with a positive Wassermann reaction. Wassermann examined one thousand and ten persons without syphilis but they were afflicted with other diseases, such as, tuberculosis, pneumonia, typhoid fever, or other infectious conditions, and indeed, in all of them the reaction was found negative. Likewise Plaut's 126 cases gave similar results, save in five the reaction was positive, but in none of them could a previous history of syphilis be satisfactorily eliminated. Of seven children who have suffered from scarlet fever, only one gave a positive reaction, but in this case hereditary syphilis was demonstrable.

In the fifth chapter Plaut embodies the results of his own clinical investigations which are extremely interesting and instructive. The cases selected for study were general paralysis, cerebral syphilis, tabes, tabes with a psychosis and mental enfeeblement on hereditary syphilitic basis. The material of general paralysis consisted of 153 cases—107 men and 46 women; a luetic history was obtained in 78 and 58 per cent respectively. In all of them the serum gave a positive reaction; in 147 cases the cerebro-spinal fluid was examined; in two the reaction was doubtful and in six negative (in these the serum was positive). Upon the strength of these results Plaut asserts that syphilis is the cause of general paralysis and that every parietic is still syphilitic.

In cerebral syphilis the serum is positive and the cerebro-spinal fluid,

as a rule, is found negative. The author regards this an important diagnostic point in the differentiation of general paralysis from cerebral lues. Eighteen cases of cerebro-spinal syphilis were examined; they may be divided into three main groups—(1) 14 cases with a negative reaction of spinal fluid but a positive serum reaction; (2) three cases with a positive reaction of both serum and spinal fluid; (3) one case in which the cerebro-spinal fluid and serum were negative. Plaut has not met any cases in which spinal fluid was positive and serum negative.

Only 16 tabetics were examined and the majority of them were in the incipient stage of the disease. In six the spinal fluid reacted positively, one slightly positive (questionable) and three negative; the serum was positive in eight and negative in two. Only in one instance the spinal fluid alone was examined and was positive; in four cases the serum alone was examined and only one of them was negative. These results teach us that tabes like general paralysis is of a syphilitic genesis.

A very important and interesting chapter is devoted to various forms of mental enfeeblement in childhood in which the hereditary syphilitic taint played an important rôle in the etiology. Fifty-eight children were examined; in 48 the serum alone was tested, in six both serum and spinal fluid and in four the spinal fluid alone was examined. They may be tabulated as follows:

TABLE.

Diagnosis.	Spinal Fluid.		Serum.	
	Positive.	Negative.	Positive.	Negative.
Lues (not cerebral) sec. Manifestat. . . . .	..	2	..	..
Lues (not cerebr.) III lat. ....	..	..	2	..
Progressive Paralysis	4	..	3	..
Progressive enfeeblement not paretic. . . . .	..	..	2	..
Inact. Pupil. without psychic disturb. . . . .	..	..	1	..
Inact. pupils with enfeeblement. ....	..	..	2	..
Enfeeblement with motor disturbances . . . . .	..	..	2	..
Enfeeblement without somatic disturbances . . . . .	..	..	5	4
Hemiplegia without enfeeblement. ....	..	..	..	1
Meningococco. meningitis luetic				
Manifest. (Hered.) . . . . .	..	2	..	..
Acute cerebral lues.	2	..	1	..
Hydrocephalus . . . . .	..	..	1	2
Nervous . . . . .	..	..	2	7
Degenerates . . . . .	..	..	2	1
Healthy . . . . .	..	..	..	14
	6	4	23	29
	10		52	

Plaut examined the serum of a whole family with the following results:

<i>Members of Family.</i>	<i>Results of Examination.</i>
Husband denies syphilis.	Not examined.
Wife denies syphilis.	Serum positive.
<i>Children.</i>	
1. Son, æt. 18, apparently well.	Not examined.
2-4. Miscarriages in the 6th month.	
5. Ludwig, Juv. G. P.	Spinal fluid and serum positive.
6. Premature birth in the 7th month. Died 6 mos. after birth.	
7. Joseph, æt. 11, stationary dementia.	Spinal fluid neg., serum positive.
8. Kate, æt. 8½, nervous, otherwise well.	Serum neg.
9. Otto, æt. 6½, imbecile, nervous.	Serum positive.
10. Mary, æt. 3½, luetic exemth. at 6 months.	Serum positive.

In the sixth chapter he discusses the influence of the Wassermann reaction during the course of the disease and on the mercurial cure and according to his own investigations specific treatment in paresis produces no effect on the Wassermann reaction.

In the seventh chapter a comparative serological and cytological investigation is given.

Plaut has dedicated an important book to Neurology and Psychiatry, and its value cannot be too highly lauded. It is a pleasure to note that Plaut's book has been selected for a translation by the editors of the Nervous and Mental Disease series and, indeed, they are to be congratulated upon such a splendid choice.

MORRIS J. KARPAS, M. D.,
Ward's Island, New York.

Seventeenth Annual Report of the State Charities Aid Association to the State Commission in Lunacy. Nov. 1, 1908. (New York: United Charities Building.)

This report shows that upon October 1, 1909, there were in the State hospitals and licensed private asylums of the State of New York 31,541 insane persons, an increase of 1.034 since the report of the previous year. Of this number 1127 were criminal insane at Matteawan and Dannemora and 1052 were the inmates of 24 licensed private asylums. This increase in the number of insane during the year leads the State Charities Aid Association to suggest the wisdom of a wise forethought on the part of the State in making proper provision for an inevitable increase in the number of patients during a period of five years, rather than to provide each year for an actual increase after it has occurred. Including the overcrowding existing at present as estimated by the Commission in Lunacy and the prob-

able increase of patients between October 1, 1909, and October 1, 1914, the conclusion is reached that 6719 persons additional will need to be taken care of during the five years' period mentioned. To meet this urgent demand, besides the accommodations for 1754 patients already arranged for by appropriations they recommend hospitals for 600 acute cases, cottages and pavilions for about 300 chronic, disturbed or tuberculous patients and rooms for 300 patients besides, in apartments to be vacated in consequence of the erection of separate quarters for physicians, nurses and other officers and employes, a total of 1200 patients more. This number (2954) is wisely thought to be the limit of expansion on the grounds of existing State hospitals. They, accordingly, recommend the building of a reception hospital in the City of New York to accommodate 200 patients. To give provision for the remainder two additional buildings should be erected, one in Westchester County to accommodate 2000 patients and the other in Rockland County or on Long Island. To build these hospitals for acute cases, cottages for chronic cases and additional homes for officers and employes; to enlarge service plants and to acquire additional land; and to erect new buildings on Ward's Island and in connection with the Long Island State Hospital, a reception hospital in New York City and two new institutions on new sites will require \$7,474,325, an outlay which any State less wealthy than New York might contemplate with a heavy heart. That it is the wisest and cheapest for the State ultimately no one can doubt.

The section of the report which deals with the occupation and entertainment of insane patients is of unusual interest. The value of employment and diversion as a therapeutic measure is emphasized rather than any considerations of the monetary value of the labor performed. Occupation and diversion help both body and mind and thus promote recovery. In less hopeful cases these agencies arrest the tendency to mental deterioration and often bring about an improvement in condition which permits the chronic patient to live outside the State hospital. The establishment of courses for the instruction of nurses and attendants in methods of interesting their patients in those occupations and amusements which are found to best promote recovery is also urged in connection with the School of Philanthropy in New York.

An equally interesting section of the report treats of the proper care of the alleged insane pending their commitment and a plea is made for the transfer of the powers and duties connected with the detention and commitment of the insane from the poor-law officers to the health officers. The connection of the poor-law officials with the insane is a remnant of the old system of local care of the pauper insane in almshouses at a time when there was no other provision for the care of insane persons. The care of the insane has now become a health question and it is important that there be no delays or mistakes in the treatment of the insane in the early and curable stages of their malady. It is pointed out also that if the medical care of the insane pending commitment were given to health

officers it would give a large and active body of medical men a valuable experience in this heretofore neglected class of diseases and help to educate the public. Above all such removal from the custody of officials of the poor would bring about a great improvement in the attitude of the public towards the insane by severing the present unnatural association of insanity with pauperism.

The report of the Sub-Committee on Prevention and After-Care, which is included in this report, contains much valuable food for thought of which our space will not permit a more detailed mention. It seems unfortunate that so few State institutions co-operate with this sub-committee and as has occurred before in the history of this sort of philanthropy the work continues personal and local rather than State-wide and systematic. Much remains to be done to make the movement more efficient.

The reports of visitors to State hospitals are more than usually complete and we may add sensible. There is a conspicuous absence of those fantastic and sensational recommendations which often characterize the activities of amateur philanthropists. These visitors show a familiarity with the conditions which they have been visiting and commend or criticize with an evident knowledge of the situation. The appendix of the report gives useful suggestions to visitors to State hospitals for the insane which ought to be brought to the attention of all persons visiting institutions in a similar capacity in other States. The matter, manner of presentation and general spirit of the work of the State Charities Aid Association are admirable.

Expansion of Races. By CHARLES EDWARD WOODRUFF, A. M., M. D. (New York: Rebman Company, 1909.)

There are certain books of which it may be said that they represent more the author than the subject. And this need not be to their discredit. An opinionated book has at least a spine to it and animation; whatever its mode of progression at least it attempts to get somewhere. For those who are both learning and thinking it has charms lacking to a more balanced literature.

Colonel Woodruff's "Expansion of Races" is such a book. Under this title one finds an anthropological study, a very sturdy and interesting one, in justification of the policy of imperialism. The author attacks many problems by the way, on some of which, as, for example, the effect of the tropics on white races, he has a very special knowledge. The treatment of the negro problem is worthy of attention; and Colonel Woodruff's views on many other things—on "Christianity and Democracy," on commercialism, on the matter of a Filipino part of the regular army, on further diverse subjects—are ably put.

The book opens with the thesis that population acts as a fluid, and this simile is elaborated to the very last tip of its numerous ramifications. The "Saturation Point of Populations," the "Evils of Undersaturation and Supersaturation," the behavior of streams of migration are treated in

much pertinent detail. But the simile has led its artificer into a snare now and then. Witness the following:

"The soil cannot possibly hold all the rain poured upon it. Some must run off or be evaporated after collecting into pools, nor in like manner can the surface hold the rain of babies poured upon it. They, too, collect in pools of humanity to be evaporated by death, or they must flow off in migrating streams as soon as able."

Though grotesque, this figure expresses well the reasoning upon which the author justifies our policy of "expansion," as it is so often discreetly termed. He suggests indeed that we have an economic right to Haiti and the Central American countries. As he phrases it, "Imperialism is commercialism."

In the chapter growing from this idea one finds a discussion of the proper diet for white men in the tropics, on tropical neuræsthenia, and on the "myth of acclimatization." Then one passes to a broad consideration of various civilizations, of democracies, of "the unnatural democracy of America," and, finally, of the future democracy. The statistics furnished are usually convincing and always seductive. The author, too, has a wide command of authorities.

It is difficult in another way than by that of enumeration to give an idea of the book's scope. Many problems of the races of man are juxtaposed that have little essential connection. The treatise is a unit only in so much as it is an attempt to turn anthropology to our American uses. But the many topics are strikingly handled. The author believes (among other things) that there can be no fusion of the negro and white races in this country, that hybrid races are always weak, that acclimatization is a myth, that education cannot improve the intelligence, that socialism is inevitable. These views are worthy of consideration though one may dissent from them. Perhaps not a few readers will have the experience of the present critic. He took up the "Expansion of Races" to review it for a journal, but ended by reading it for himself.

The volume, as a specimen of book-making, is an agreeable one.

Modern Clinical Medicine: Diseases of the Nervous System. Edited by ARCHIBALD CHURCH, M.D. An authorized translation from "Die Deutsche Klinik," under the general editorial supervision of DR. JULIUS L. SALINGER. (New York and London: D. Appleton & Co., 1908.)

We know of no recent work on diseases of the nervous system which so thoroughly meets at once the wants of the general practitioner and the requirements of the specialist, as does this work.

The various divisions of the work differ in strength and value, as would naturally occur when written by so many different authors, but we can find no portion of the book which will not well repay careful reading and there are many of a very high order of merit.

The contributors to the volume, without mentioning by any means all,

are such well-known authorities as Rosin, Ziehen, Schuster and Bernhardt, of Berlin; Redlich, of Vienna; Quinke, of Kiel; Erb, of Heidelberg; Edinger, of Frankfurt; Eichhorst, of Zurich; and Wernicke, of Breslau.

The articles which will be read with perhaps the greatest interest by psychiatrists are those upon the Normal and Pathological Histology of the Nervous System, with special reference to the Neurone Theory (Rosin), General Neurological Diagnoses (Redlich), Modern Aids to Diagnosis of Diseases of the Brain (Redlich), Lumbar Puncture (Quinke), The Symptom-Complex of Aphasia (Wernicke) and Hysteria (Ziehen).

To properly review a work of this character would necessitate an analysis of each division of the work. The titles of the articles we have selected, with the names of their authors, will give the expectant reader some slight idea of what is here offered.

We think the editor of the work is to be commended for presenting it to English readers, and that he is also to be commended for refraining from making any editorial additions or comments, which might, as is generally the case with such addenda, to quote the editor, "confuse the medical reader by discussions of disputed and unessential features."

Eleventh Annual Report of the State Board of Insanity of the Commonwealth of Massachusetts for the year ending November 30, 1909.
(Boston: Wright & Potter Printing Co., State Printers, 1910.)

The most interesting portion of this elaborate report of 290 pages is the section devoted to a resumé of the proceedings at two semi-annual conferences between the Commissioners in Lunacy and the trustees and medical officers of the different State institutions. At these conferences matters of practical importance seem to be dealt with and in addition to formal papers by the chief medical officers of the institutions represented there are full and free discussions participated in by all present. At the first conference "Precautions Against Ill-treatment of Patients in Institutions" were considered carefully and upon the whole judiciously, although some criticisms might be justified. It is evident from the discussion that many institutions have not yet established training schools for nurses, and that in the majority of institutions there is a modicum of instruction which hardly entitles the institution to the credit of having a school at all. One of the speakers, for example, said: "The persons (referring to nurses) need instruction. They cannot be expected to know their duties without patient and continued advice and instruction. They need to talk with the one who represents the management of the hospital and details of duty should be told over and over." This would seem to indicate that the standard of education is very low and scarcely above the education of the nurse for the insane forty years ago, when the newcomer was asked to read the "rule book," and was supposed to be thoroughly familiar with his duties as soon as he had finished the book. This standard seems in marked contrast to the conception of the education of a nurse which obtains at Danver's State Hospital as shown in the recent address of Dr.

Page. Massachusetts owes it to herself to establish a training school in each one of her institutions for the insane and should no longer be satisfied with hap-hazard methods of instruction.

At the second conference the matter of records was taken up and we are glad to observe that a uniform and satisfactory system of histories and records exists in all the State institutions. The use of the dictaphone in one of the hospitals would seem worthy of imitation by all. The discussion upon the correspondence of the insane revealed the surprising fact that the superintendent of a hospital or his assistants has no legal right to open any letter addressed to a patient to ascertain whether or not it may contain money, matches, morphine or fire-arms, but he could fail to deliver it and might in fact "*suppress it and burn it up.*" If the right to suppress and burn actually exists it is to be hoped that a legal enactment may be found to justify such proceedings.

It is interesting to note that the total number of different patients actually received in institutions during the year was 2954, a decrease of 110 compared with an increase of 328 the previous year. This seems encouraging, but after all a twelve months period is too short a time to draw any very conclusive deductions.

The appointment of such an energetic worker and accomplished scholar as Dr. E. E. Southard as State Pathologist marks a new era in the care of the insane in Massachusetts. His previous career justifies the highest hopes for the future. The State is most fortunate in getting his services.

Traité International de Psychologie pathologique. Directeur, DR. A. MARIE. Comité de Rédaction, Bechterew, Clouston, Grasset, Lugaro, Magnan, Pilcz, Raymond, Ziehen. Tome premier, Psychopathologie générale, pp. viii-1028, with 353 illustrations. (Paris: Félix Alcan, 1910.)

The value of composite treatises such as the present one is always a question for differing opinions. What one man cannot undertake single-handed is often somewhat disappointingly performed when various authorities unite in the collaboration. The disadvantages of such collaboration are self-evident and practically inevitable; they must e'en be reckoned with.

The present volume is divided into ten chapters. In the first (pp. 1-30) Grasset discusses the relation of psychiatry and neurology and the unity in methods and object of "human neurobiology." The field comprises conscious (mental) and subconscious (automatic) psychic facts, i. e., the superior and inferior psychism of Grasset. The soul, not being a scientific fact, is ignored.

Grasset hastily reviews the well-known methods of study (symptomatic, pathologic, etiologic, localization), but without reference to the most important of all, that of individual psychology and biogenesis. Neither is this subject considered in the later section on psychology (Bechterew), which deals with objective symptomatology and methods of examination.

Under the sociologic relations of psychiatry, Grasset refers cursorily to the rights and duties of society, with regard not only to the actually

alienated, but also to the "demifous," whose legal status he has recently treated monographically. His *eugenics* (a word, however, which he does not use) is confined to what may be spoken of as the stereotyped orthodox position—prohibition of marriage in mental cases, even though cured. He refuses to countenance the pragmatic suggestion (anticonceptual prophylaxis) of more liberal authors.

Chapter II is a well-documented and interesting article by Del Greco, dealing with mental disease historically, philosophically and critically. The chapter loses, perhaps, in effectiveness, however, and certainly in directness and unity, by the wide excursions into the whole fields of philosophy and natural science, which the author permits himself. The treatise is a broad and learned one which essays to show how through the evolution of ideas, the present science of psychiatry has come to its place in the realm of knowledge.

A voluminous, amply illustrated article by A. Marie on psychiatric anthropology is followed by shorter chapters on the fissures and convolutions by Mingazzini, and the chemistry of the cerebral substance by A. Marie.

Next are treated disorders of the bodily functions in mental disease (pp. 315-457) by A. Marie and Dide, and pathologic anatomy and histology (pp. 459-708) by Klippel, Lugaro, Marinesco, Dide, Médéa and Laignel-Lavastine. In the section on the Histologic Diagnosis of Mental Diseases, Lugaro offers brief but judicial consideration of the differing opinions of Flechsig and his opponents, notably Vogt and Brodmann, on the myelogenetic theory; and also of Marie and his critics on the aphasia question. Particularly in the discussion of Flechsig's theory is exemplified the process by which the truth of scientific facts becomes established. A startling discovery is made. It is spread abroad with sensational effect. As a theory it finds ever widening application—it explains everything—becomes dogma. Exceptions are discovered—flaws brought to light in the theory—incompatible facts come forward. The opposition grows—theory rejected altogether. Communal points appear between defenders and critics of the theory—some truth in it after all—modified position of both sides—each partly right—question of point of view, mode of attack, etc.—reconciliation—resultant approximate truth established—all hands happy.

Taking up the question of the anatomic basis of consciousness, Lugaro sets out with the conceptions of Tanzi, upon which he elaborates. "Every psychic phenomenon is presented to us as a phenomenon of consciousness and at the same time as an affect state . . . the former is particularly associated with morphologic conditions and develops among the central terminals of the afferent fibers, and is, therefore, interneuronic; the latter is particularly associated with dynamic, nutritive and chemical states which develop within the cell bodies, and is consequently intraneuronic." Thus is explained the relative differences in stability of intellective and affective events.

Lugaro discusses the general pathology of the essential cortical elements,

nerve cells, neuroglia, vascular elements, but without detail. His "anatomic syndromes" are confined to the well-known limits—comprising the various gross lesions; developmental anomalies such as infantile gliosis; arteriosclerotic and senile dementia; paresis; toxic, exhaustive and inflammatory states, and primary neuronie degenerations, such as amaurotic family idiocy. Dementia præcox is classed as a primary neuronie degeneration. The gloomy outlook for the pathology of the great mass of psychoses and psychotic states, represented partially by the so-called "functional psychoses" is frankly met. In such cases "the search for anatomic lesions must appear not merely as a desperate undertaking, but still more as unjustifiable labor."

Marro writes (pp. 709-814) of the psychologic development at puberty, passing in review the varied abnormal mental states and diseases which are associated in one way or another with this period of life. The article includes a discussion of puberty and crime, and the psychology of homicide.

Clouston affords a comfortable talk on the general methods of clinical examination. The article is somewhat the worse from the proof-reader's neglect. In discussing the character of the voice, the author is made to say that the ideal woman should have one "ever soft, gentle and lord, an excellent thing in woomen."

The volume closes with sections by Bechterew on the objective psychologic examination of patients; by Ferrari on the medico-psychologic examination of defective children; and by Carrarra on the examination of the criminal insane.

Two other volumes are to complete the series. Volume II is the clinical volume, while Volume III covers the broad field of therapeutics and institutional care and management.

FARRAR.

Reports from the Pathological Laboratory of the Lunacy Department. New South Wales Government. Vol. II, Part I. Published by authority of the Government of the State of New South Wales. (Sidney: William Applegate Gullick, Government Printer, 1910.)

This volume of 112 pages contains the following papers: The Pathology of General Paralysis of the Insane, with special reference to the action of Diptheroid Organisms, by J. Froude Flashman and Oliver Latham; The Method of Diagnosis by Means of Complement Fixation, as applied to Syphilis and General Paralysis: The Wasserman Reaction, by J. Froude Flashman and A. Graham Butler; Note on the Cerebrospinal Fluid in General Paralysis of the Insane, by Thos. C. Parkinson; Demonstration in Freezing Histological Methods, by Oliver Latham; A case of Cervico-brachial Neuritis, by C. A. Hogg; Dysentery in Hospital for Insane, Parametta, by G. Prior; Degenerations following resection of Olfactory Lobe in *Dasyurus Viverrinus*, by J. Froude Flashman.

The papers are all good and will repay reading by those interested in the above subjects. Dr. Flashman who is Medical Superintendent of the Pathological Laboratories is to be congratulated on the work done under his direction.

W. R. D.

A Text-book of Mental Diseases. By EUGENIO TANZI, Professor of Psychiatry in Florence. Authorized translation by W. FORD ROBERTSON, M. D., etc., and T. C. MACKENZIE, M. D., etc. Royal octavo, pp. XVI to 803. Illustrated. (London: Rebman, Limited, 1909.)

Tanzi's excellent treatise has the distinguishing virtue of comprehending a subject, selecting essentials, and saying much about them in little, without the sacrifice of clearness.

Beginning with a discussion of the seat of the psychical processes, he points out the ultimate futility of a long array of external etiologic facts, as well as of an elaborate descriptive symptomatology, without the attempt to capture that elusive *tertium quid*, the pathogenic element. It is easy to collect causes, it is not difficult to observe subsequent symptoms, but *how* did they come about? The *why* is another question which may reasonably wait until the *how* is settled. This is the focal point in present-day psychiatric analysis.

Tanzi's conception of anatomic localization is elucidated in a few brief paragraphs. He indicates the contrast between bilateral sensory centers, corresponding with the two sides of the body and the double supply of special sensory end organs, and the unilateral sites of symbolic representation, which answer to no such peripheral reduplication, and in which the unity of psychic phenomena requires no symmetrical cortical localization. Thus the existence of specific psychic centers is placed beyond peradventure, but with qualifications which Tanzi thus expresses: "The psychical centers do not contain ideas, but the ingredients of ideas, or, better still, they have the capacity of producing the ingredients that serve to compose the ideas or to symbolize them; and the physiologic division between center and center does not correspond to categories of ideas, but to categories of ingredients, or of symbols. . . . The law that the functional processes are always pluricellular also holds, however, for these centers, as does also the law that every cell has the power of resisting or yielding to stimuli, and of reacting in various though similar ways. Further, the activity of a single cell never corresponds to an imaginable figure, whether it be of the most elementary or of the most vaguely symbolic nature, unless it is compounded with that of very many other cells, perhaps thousands, scattered here and there in the brain."

The consideration of the causes of mental disease, as thus far discernible, is gratifyingly condensed in twenty-eight pages. The student is spared the stereotyped statistics, and elaborate conventional discussions of climate, race, season, occupation, etc., which though requisite in the encyclopedic treatise, seem often enough to be the expression of a sort of text-book habit, which may leave much to be desired.

Tanzi shows that the nerve element itself is hardly subject to fatigue, and that the only psychic events which may primarily do harm are the emotions. This is so because of the widespread visceral disturbances associated with emotional states, and which determine metabolic disorders and contribute to the blood autotoxines, which, by reason of its delicate

organization, appear to have a selective action upon the brain. "This is the only way in which mental diseases can have a strictly psychic origin."

The first third of the book comprises, in addition to the sections already discussed, chapters on the general pathologic anatomy of the brain, and pathologic psychology. The latter is divided into sections on Sensibility, Ideation, Memory, the Sentiments, Movements and Other External Reactions, in each case the consideration of the morbid processes being preceded by a few introductory pages on the normal psychology. These introductions are designedly elementary and well adapted to the needs of the student. At the same time the chapters are adequate, lucid and direct, and well rendered in the translation.

The classification of mental diseases is allowed a separate chapter (pp. 261-285), in which the author reviews the groupings of Esquirol, Griesinger, Guislain, Morel, Krafft-Ebing, Verga, Morselli and Kraepelin. His own classification, followed in the clinical section (pp. 286-771), is as follows:

I. Poisonings:

- (1) Pellagra, (2) alcoholism, (3) morphinism, cocaineism.

II. Toxic infections and autointoxications:

- (1) Amentia (including acute delirium), (2) uræmic psychoses, (3) thyroid psychoses, (4) paresis.

III. Encephalopathies:

- (1) Infantile cerebropathy, (2) adult cerebropathies (tumors, trauma, syphilis, arteriosclerosis, senile dementia).

IV. Affective psychoses:

- (1) Mania, (2) melancholia, (3) circular psychoses.

V. Constitutional neuropsychoses:

- (1) Neurasthenia, (2) hysteria, (3) epilepsy.

VI. Dementia præcox:

- (1) Hebephrenia, (2) katatonia, (3) paranoid.

VII. Degenerative mental anomalies:

- (1) Sexual perversion, (2) constitutional immorality, (3) paranoia, (4) intellectual feebleness (hereditary imbecility).

In this scheme the author attempts to follow a progressive course from purely or predominatingly exogenic mental disorders to those predominately or essentially endogenic. There is thus a double appropriateness in opening the clinical section with Pellagra, to which twenty-three pages are devoted.

In classification Tanzi follows in general the etiologic-clinical method just as does Kraepelin. His scheme is, however, much simpler, and on this account, necessarily less open to dispute. He does not distinguish between exhaustive and infective psychoses clinically. All of these which follow an acute course he puts together as Amentia, believing the toxic or infective agent to be the prime etiologic factor. Even the cases in which there is palpable organic exhaustion, suffer in consequence metabolic disorders, the expression of which is an autotoxic state which may show itself characteristically as an abnormal mental condition—amentia.

At the other end of Kraepelin's scheme, among the congenital psychopathies so-called, Tanzi also finds grounds for criticism. He considers so many subdivisions superfluous, *e. g.*, between original neurasthenia and the obsessional and impulsive states, all of which he believes represent merely three grades of one process, thus approximating in his conception the original thesis of Beard.

Tanzi makes the familiar objection to the maniac-depressive insanity of Kraepelin, that it destroys the integrity of the so-called simple manias and melancholias. The result must be, he gloomily predicts, "that, after a century of recognition, melancholia will shrink into the obscurity of a poorly defined involuntional form, and mania will disappear altogether from the list of independent mental diseases. On the ruins of their syndromes there will be raised on the one hand a too widely extended conception of dementia præcox, and on the other of a new disease of doubtful nature and very varied in its manifestations—maniac-depressive insanity." If the outlook was unhappy when this was written, it must be still more so now, for in the interim, even the involuntional melancholia has been stripped of its identity by the Kraepelin school.

That the tendency has been to extend the Kraepelin syntheses to unwarranted extremes there can be no doubt, but this is entirely in accord with the pendulum movement of any new idea which engages wide attention. On etiologic and prognostic grounds it may well be held erroneous to confound all possible phases of maniac excitement and melancholic depression, if by this procedure the resultant synthesis becomes practically a chronic degenerative psychosis, of which *folie circulaire* or cyclothymia is the type. In this way altogether too many simple cases of excitement or depression, often clearly reactive in character, are calmly foredoomed to hypothetical recurrences and alternate attacks, where there is no more reason, so far as we know, for such a sinister prophecy, than there would be in saying that the man who has once broken his leg, is a candidate for breaking the same leg again, and perhaps again, or else the other leg. The tendency among alienists to look at the affect psychoses in this way is dangerous. The beliefs of the specialist to-day are the beliefs of the family physician to-morrow, and of the laity the day after. Thus may habits of thought be engendered which hereafter might assume the baneful importance of etiologic factors.

On the other hand, it must be admitted that definite symptomatic criteria have not yet been forthcoming to forecast the life course from the individual attack. Perhaps such an act of sheer prophecy should not be expected, even of psychiatry. Kraepelin challenges any alienist to say from the symptom-picture alone, whether he is dealing with a case of simple mania, periodic mania or circular insanity. Tanzi admits that it cannot be done. Whether or not the future may afford aid in this dilemma, the fact remains that in the present uncertainty there is no more justice in assuming that every first attack presages recurrence or periodicity—as by the law of probabilities a certain number of recurrences will take place—thus over-

organization, appear to have a selective action upon the brain. "This is the only way in which mental diseases can have a strictly psychic origin."

The first third of the book comprises, in addition to the sections already discussed, chapters on the general pathologic anatomy of the brain, and pathologic psychology. The latter is divided into sections on Sensibility, Ideation, Memory, the Sentiments, Movements and Other External Reactions, in each case the consideration of the morbid processes being preceded by a few introductory pages on the normal psychology. These introductions are designedly elementary and well adapted to the needs of the student. At the same time the chapters are adequate, lucid and direct, and well rendered in the translation.

The classification of mental diseases is allowed a separate chapter (pp. 261-285), in which the author reviews the groupings of Esquirol, Griesinger, Guislain, Morel, Krafft-Ebing, Verga, Morselli and Kraepelin. His own classification, followed in the clinical section (pp. 286-771), is as follows:

- I. Poisonings:
 - (1) Pellagra, (2) alcoholism, (3) morphinism, cocaineism.
- II. Toxic infections and autointoxications:
 - (1) Amentia (including acute delirium), (2) uræmic psychoses, (3) thyroid psychoses, (4) paresis.
- III. Encephalopathies:
 - (1) Infantile cerebropathy, (2) adult cerebropathies (tumors trauma, syphilis, arteriosclerosis, senile dementia).
- IV. Affective psychoses:
 - (1) Mania, (2) melancholia, (3) circular psychoses.
- V. Constitutional neuropsychoses:
 - (1) Neurasthenia, (2) hysteria, (3) epilepsy.
- VI. Dementia præcox:
 - (1) Hebephrenia, (2) katatonia, (3) paranoid.
- VII. Degenerative mental anomalies:
 - (1) Sexual perversion, (2) constitutional immorality, (3) paranoia, (4) intellectual feebleness (hereditary imbecility).

In this scheme the author attempts to follow a progressive course from purely or predominatingly exogenic mental disorders to those predominantly or essentially endogenic. There is thus a double appropriateness in opening the clinical section with Pellagra, to which twenty-three pages are devoted.

In classification Tanzi follows in general the etiologic-clinical method just as does Kraepelin. His scheme is, however, much simpler, and on this account, necessarily less open to dispute. He does not distinguish between exhaustive and infective psychoses clinically. All of these which follow an acute course he puts together as Amentia, believing the toxic or infective agent to be the prime etiologic factor. Even the cases in which there is palpable organic exhaustion, suffer in consequence metabolic disorders, the expression of which is an autotoxic state which may show itself characteristically as an abnormal mental condition—amentia.

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shadowing every patient with a dubious future and seeing in his illness only a partial manifestation of a deep-lying constitutional malady—in this attitude there is no more justice than in its antithesis, which recognizes only a succession of accidental attacks of the same or of a contrasting disease. This by the way.

Tanzi's arguments against the Kraepelinian viewpoint, it must be conceded, are not very convincing; and yet his protest, like many another to the same purpose, impresses one as a not unwholesome counterpoise to an extreme tendency in many quarters, which perhaps even oversteps the limits of Kraepelin's own position.

The text-book of Tanzi may be commended for its originality and lucid description, although it wants the searching clinical analysis and the refinement of clinical variety one is used to in Kraepelin. One is somewhat startled to behold the confines of amentia enlarged away beyond those of mania, although it is to be remembered that under amentia are grouped most of the infective, toxic and exhaustive states. Dementia præcox Tanzi reckons at at least 25 per cent of hospital admissions, certainly a high figure.

A chapter on asylums and institutional care closes the work.

FARRAR.

Collected Papers, 1909, Department of Neuropathology, Harvard University Medical School.

This is a paper-bound collection of six papers which appeared during 1909, in various medical periodicals, the authors being Drs. E. E. Southard, Henry A. Cotton, F. P. Gay, J. G. Fitz-Gerald, C. T. Ryder, E. T. F. Richards, A. H. Peabody, M. M. Canavan, C. T. McGaffin, and J. J. Putnam. As an introduction there is a brief note concerning the establishment of the Bullard Professorship of Neuropathology, which chair is filled by Dr. Southard. It is needless to say that the papers are interesting and that it is convenient to have them in this form. W. R. D.

Mortality Statistics, 1908, Ninth Annual Report. (Washington, Government Printing Office, 1910.)

This work is probably too well known to need any description. The statistics of those dying insane seem to be as full as is possible in the absence of any standard classification.

W. R. D.

Abstracts and Extracts.

Ueber Fälle von Jugendirresein im Kindesalter. VON H. VOGT. Allgemeine Zeitschrift für Psychiatrie, Bd. 66, S. 542.

The author's conclusions are:

1. Even before the beginning of normal puberty there are disease conditions in childhood which from their symptoms, course, and whole character must be considered as early forms of adolescent insanity.

2. In many cases it can be proved that there is an abnormally early puberty; in other cases it is probable. The onset of these deep fundamental changes, which the organism passes through at puberty, at an abnormally early time, or the reverse, points to the possibility of an affection of the brain.

3. Moreover, the early forms of adolescent insanity show catatonic, hebephrenic, and paranoid conditions. By far the most numerous are cases of the first, the last being naturally most infrequent. The frequency of catatonic symptoms in childhood is explained by the psychomotor condition of the child which renders it especially liable to such a complex. The later symptom-picture shows clearly the characteristic form of mental enfeeblement with the corresponding characteristics which are found in the content of the child psyche.

4. Many cases are grafted on an already existing condition of weak-mindedness, others have for a variable length of time previously shown peculiarities, characteristic mannerisms, etc. These last cases have often been recognized and worked over in school. Other cases occur in children who have previously been quite normal.

5. Recovery may occur. The prognosis is uncertain. Remissions are numerous. Many cases recover partially, many become demented. Concerning the course of the early forms of adolescent insanity the fundamental principles of Cramer are applicable.

6. The differential diagnosis must be made from hysteria, increased muscle tone in indigestion, organic disease, or several other affections, especially cases of idiocy with catatonic symptoms. On the other hand it is possible for early cases of adolescent insanity which have been cured with some defect remaining to greatly resemble weak-mindedness. When differentiation by the characteristic dementia is impossible, the diagnosis must be made on the course, or accompanying symptoms. There are cases in which the differential diagnosis is doubtful. Some cases of dementia infantilis, for example, belong in the group of the early form of adolescent insanity. Others, however, represent another form of illness whose nature is as yet entirely unknown.

W. R. D.

Contributo allo studio dell' anatomia patologica della paralisi progressiva: alterazioni viscerali.—Qualche considerazione sulle plasmacellule. Per Guinio Catòla. *Rivista di Patologia nervosa e mentale*, Vol. XV, p. 1, Jan., 1910.

In comparison with the great amount of study which has been made of the nervous system in paresis, but little has been done upon the other viscera. The purpose of this research is to investigate such changes in seven cases and the organs studied are the liver, spleen, kidneys, muscles, and peripheral arteries. Summaries of the results of nine other authors are given, after which each case is taken up in detail, a brief clinical history being followed by a more detailed report of the changes found in the organs above mentioned. The staining methods were the Unna-Pappenheim, Unna-Taenzer. Van Giesen, Mann, Cajal's trichrome, and Flemming's fixation method for fatty degeneration. Two of the cases died in epileptiform attacks, two in apoplectiform attacks, and three from exhaustion. The various theories of the origin of plasma cells are then discussed and the presence of the same in cases of senile dementia, alcoholism, tabes dorsalis, Banti's disease, and in six and seven months faetuses of syphilitic mothers.

The following conclusions are then stated:

1. In the viscera of paretics there may be found a series of vascular and perivascular changes (infiltration with lymphocytes and plasma cells), and of parenchymal changes (cloudy swelling, degenerations), similar in the main with those of the central nervous system, but which cannot be considered as essentially specific lesions of the disease in question. However, while the parenchymal lesions are not different from those which may be met with in any other dyscrasic or toxic state, the plasma cell, alone or accompanied by lymphocytes, may be compared in the various organs in quite different anatomo-pathologic contingency, and especially there may be an active phenomena, more or less evident, of connective hyperplasia.

2. As in the brain, so in the viscera, and especially in the liver, the presence of lymphocytes and of plasma cells may make quite probable the diagnosis of progressive paralysis, when the infiltration of such elements is diffuse, in a more or less uniform manner, throughout the organ and when focal defect lesions (tumors, parasites, abscesses, etc.), or other lesions, or diffuse easily diagnosticated (tuberculosis, syphilis, cirrhosis, etc.), are lacking. In other words, organs which ordinarily do not contain plasma cells nor lymphocytes, as the liver and kidneys, when they are rich in such elements, without or almost without the concomitant phenomenon of cirrhosis, more or less recent, acquire all the probabilities of having belonged to a paretic.

3. In none of the paretics examined have we met the histo-pathologic picture described by Klippel under the name of "vaso-paretic" liver.

4. We have not observed a perceptible difference between the visceral lesions of paretics dying suddenly, while in a good condition of general

nutrition, by apoplectiform or epileptiform convulsion, and those of the viscera of paretics dying slowly and with bedsores of greater or lesser size, which would seem to be sufficient to produce the above-described changes, that is, the state of metasyphilitic intoxication, or what constitutes the fundamental pathogenesis of progressive paralysis.

5. The plasma cell shows, in the viscera that we have studied, a clear histogenic origin; it may be proved that the cell comes from the connective. But we may be induced to admit in certain cases a hematogenous origin if we wish to identify the plasma cell as the condition described by Unna and Marschalko with other elements that are modified through many morphologic characteristics and that by Hodara in a later condition called pseudo-plasma cell, cells that, in all probability are simply mononuclear leucocytes greatly modified in their staining reaction.

W. R. D.

A Cytoscopic Study of the Cerebrospinal Fluid in General Paresis. By SAMUEL STERN, M. D. New York Medical Journal, Vol. XCI, p. 909, April 30, 1910.

The author states that "Heretofore it has been an accepted fact that in all metasyphilitic processes there occurred a lymphocytosis, and in many reports they were estimated by cubic millimeters. . . . It is extremely doubtful; in fact, at this time, I am almost prepared to say that lymphocytosis does not exist as a normal or abnormal condition in the cerebrospinal fluid. That which has been previously reported was most likely due to degenerative endothelial cells." Typical lymphocytes may be present, but when they are it is due to "a free hemorrhage into the spinal canal when the puncture is made, or a few minims of blood finds its way into the lumen of the needle, during its passage through the muscular structure necessary to reach the spinal canal."

As a control to the cell morphology of both the lymphocytes and endothelial cells, the author has studied smears of fluid from the pleural cavity and has found that the morphology and degenerative changes were the same in the pleural fluid as the cells found in the spinal fluid. The controls showed the same character of cells, the same proportion of lymphocytes as those demonstrated in general paresis, the only difference being the abundance of degenerative endothelial cells. It was noted that there appears to be a difference in the relative number of cells in the non-specific cases studied, with a tendency to a comparative increase in senility and uremia; also, that in metasyphilitic diseases, cells were usually present without centrifugalization, while in the controls the cells were usually absent without centrifugalization.

The presence of plates was found, as frequently occurs in desquamation of serous and mucous membranes, and when the morphology of the single cells was compared with those appearing in plates, it was identical both in the cerebrospinal and the pleural fluid studied. The author has never seen, nor has he found any description of in literature, lymphocytes occurring

in plates. The subacute leptomeningitis which occurs in paresis accounts for the desquamation and degeneration of the endothelial cells, and thus for their presence and increase in number in the spinal cord.

The technique employed was with from ten to fifteen cubic centimeters of fluid with the Wright and Leishman stains, and a one-twelfth oil immersion lens.

In conclusion, the author states that he feels safe in declaring a case to be paresis, or tabes, upon the demonstration of a large number of endothelial cells upon centrifugalization, or the demonstration of endothelial cells without centrifugalization.

W. R. D.